MAR 22 1918

# THE IRON TRADE REVIEW

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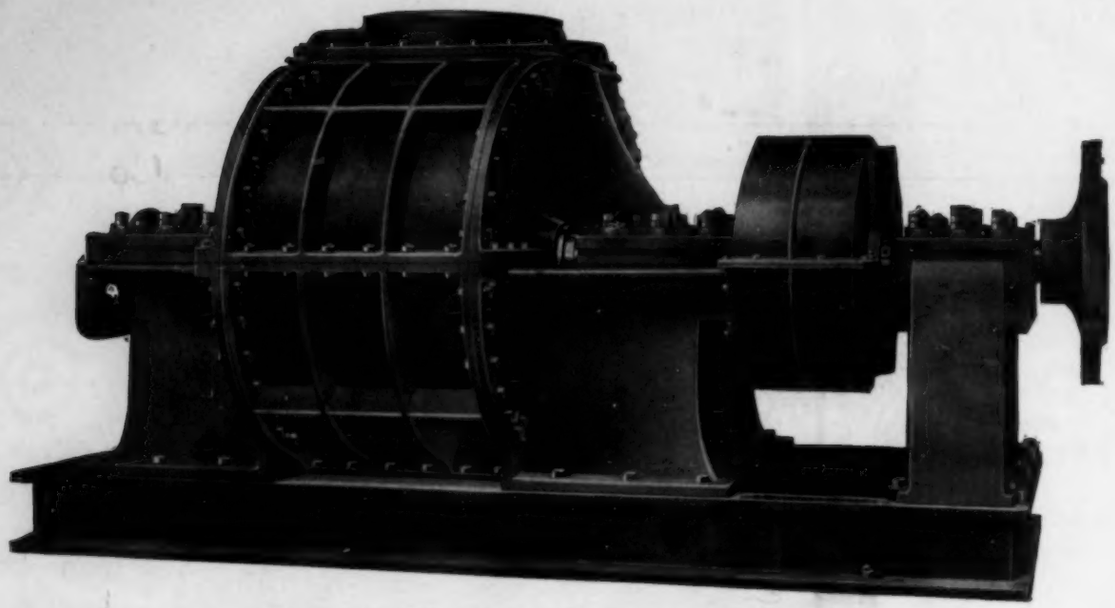

**Connersville High Pressure Gas Pump**


CONNERSVILLE

# Gas Pumps, Exhausters and Boosters

CONNERSVILLE GAS PUMPS, EXHAUSTERS and BOOSTERS are exceptionally advantageous wherever gas is handled.

Although they are the type of simplicity, they possess all the features of practical construction, resulting from years of experience.

## CORRECT

The testimonials which we have received from users of CONNERSVILLE PUMPS, EXHAUSTERS and BOOSTERS, prove that "Connersville" products are correct both in design and service. Many state that they out-work as well as out-last the best pumps that they have ever been able to obtain.

## EFFICIENT

Their range of capacity is from 25 to 40,000 cu. ft. per minute, and their pressure range is from ½ to 10 pounds. There is no lost motion—all motion is rotary, parts being carefully balanced and separated by accurately gauged clearances. There are no valves, no springs, and no internal parts requiring lubrication.

## SERVICEABLE

The service to which CONNERSVILLE PUMPS, EXHAUSTERS and BOOSTERS can be put, is almost unlimited. They can be used for handling air, gas, steam, water and all other fluids.

These pumps may be driven by belt, by direct connected steam engine, by electric motor direct connected or through gear and pinion, or by silent chain.

If you wish correct and efficient pump service write for a "CONNERSVILLE" catalog.

# THE CONNERSVILLE BLOWER CO.

**CHICAGO**
**929 Monadnock Bldg.**

**CONNERSVILLE, IND.**

**NEW YORK**
**114 Liberty St.**

THE IRON TRADE REVIEW

*Vol. LXII* Cleveland, March 21, 1918 *No. 12*

# New Price Announcement Awaited

## Industry Pauses for Word From Washington Which Will Determine Regulated Market Conditions in Ensuing Months—Conference Held at Capital—War Department Asks Competitive Bids on Nails Ignoring Fixed Price

WASHINGTON again holds the fixed attention of the whole iron and steel industry. The announcement by the President of the prices and conditions which will prevail dating from April 1 now is awaited following the conference this week between the new price fixing committee of the war industries board and representative iron and steel manufacturers. Weight has been laid upon price inequalities and practical defects of the system developed by the several months' operations under government regulation. This may bring about some modification of existing methods and schedules. One change urgently sought in the interest of greater trade stability is an extension of the period until prices again must come up for review beyond the present quarterly term.

**Nail Bids Are Asked**

Another interesting development of the regulated price situation is the request for competitive bids by the war department for 30,000 kegs of wire nails. Accompanying the proposal is the statement that the 3.50c maximum price on nails is only a recommended one and has had no Presidential confirmation. This position parallels that taken by the navy department when it was able recently to bring out competitive bids on certain lines below the so-called official levels.

Early inauguration by the government of its large buying of railroad equipment is foreshadowed by the practical completion of the specifications for standardized cars. The original plan to purchase a great block of cars at one time has been modified because of the fear that the railroads might become congested in carrying materials for this manufacture. The present plans call for early bids on about 2700 locomotives and 45,000 freight cars. Heavy demand by manufacturers preparing for government production has produced an acute shortage in the supply of old car wheels.

The agreement of the government to furnish large tonnages of steel for Canadian war production is freeing home capacity there for other purposes. This has resulted in the placing by the Canadian government of 100,000 tons of rails with the Sydney, N. S., producer for sorely-needed replacement work.

**Iron Buyers Apprehensive**

Apprehension among consumers as to pig iron supplies is spreading as their difficulties to cover are being multiplied. While most of the demand is for last half, a considerable tonnage for shipment by July is required. These inquiries find little free iron available from the furnaces for that delivery. A St. Louis interest, after vainly canvassing the market for 40,000 tons of basic, has put the filling of its needs up to the government. Chicago producers in the week turned down basic inquiries totaling 75,000 tons. Buffalo makers have been fairly swamped. One producer there is declining to quote on 95 per cent of the inquiry. A similar condition exists is other districts. Increasing difficulty to find open furnace space during the next several months for government allocations is resulting in the virtual conscription of tonnage already booked. Indications strongly point to the steady growth of this condition with its attendant complications. Some modification of present differentials is being sought by makers of copper-bearing low phosphorus, silveries and southern charcoal irons.

**Direct Coke to East**

Two eastern consumers are the beneficiaries of the virtual commandeering of an additional 28,000 tons monthly of Connellsville furnace coke. The government has ordered a prominent producer to ship these companies 100 per cent of their contracts in order to maintain their output of steelmaking iron. This means that other eastern consumers of coke must be curtailed correspondingly. Car conditions in the Connellsville regions continue to improve in an irregular fashion and shipments on contracts are much better. The fuel administration will issue jobbers' and dealers' licenses in coal and coke dating from April 1.

The Iron Trade Review.

# EDITORIAL

## Weak Spots in Germany's Armor

BERLIN bells have rung their paeans of victory and the kaiser's sword has been duly eulogized. Once more the German populace has allowed its craving for bread to be satisfied with promises of a German peace about to be clutched by the mailed fist. And all because the carcass of politically-diseased Russia has become an easy prey for the talons of the vulture. Yet, meanwhile, the allied fleets maintain their grim, inexorable blockade of the seas. Even though Germany may draw at will from Russia's resources, there are many essential raw materials which are effectually beyond German reach. Tin, rubber and nickel are a few of the items which first come to mind, all of them essential in war work.

Russia will yield Germany no tin. Prior to the war, Russia consumed between 2000 and 3000 gross tons of tin, which it imported from the outside world, largely through Germany. Germany consumed about 16,000 gross tons a year, after deducting the excess of tin contained in exports of manufactured tin goods and chemicals over imports of similar goods. In 1913, the last prewar year, Germany produced 11,320 tons of pig tin, largely from Bolivian ore, while it imported 14,040 tons of pig tin. These imports came largely through Holland. During the early months of the war Germany continued to draw heavily upon Holland but imports from Bolivia and the United Kingdom were cut off. Thus, on Jan. 31, 1913, Banca stocks in Holland stood at 3896 tons. On Dec. 31, that year, they had been reduced to 199 tons. The following table shows the nature of pig tin imports into Germany in the years 1913-1916 inclusive:

| From: | 1913 | 1914 | 1915 | 1916 | 1917 |
|---|---|---|---|---|---|
| Holland | 11,807 | 9347 | 5797 | 29 | .... |
| U. K. | 1,351 | 1985 | .... | .. | .... |
| Other imports | 882 | .... | .... | .. | .... |

This table does not show the imports by the underground route through neutrals, but at worst these are insignificant now and growing more so. The allies control all sources of production except the Dutch East Indies and it may be assumed they keep a watchful eye on this source. They know the world's output of tin almost to the last ounce. They know the destination of every shipment and bind the ultimate manufacturing consumer, even in this country, not to resell. Germany needs tin for its manufacture of tin plate, babbitt, bronze, solder, bearing metal, chemicals and other products. Here then is one of the many weak links in the German economic chain. That chain must snap, sooner or later, and Russia's fall only delays the ultimate.

## Consumers Sure of Enough Ore

IRON ore shipped direct by railroads from mines in the Lake Superior district to blast furnaces has rapidly become a more important factor in maintaining the country's pig iron production at a high rate. Ten years ago the all-rail movement was barely one-half million tons. Last year it was close to two million tons.

The official figures on shipments of iron ore from the Lake Superior district in 1917, as given on page 729, contain few surprises. The decrease from 1916 amounts to 3.33 per cent, a remarkably low figure in view of the obstacles under which water and land carriers operated during the year. The Steel corporation shipped only 44.34 per cent of the 1917 tonnage against 47.52 per cent in 1916 and against 56 per cent 10 years ago.

The season's total movement was 64,437,003 tons, a supply sufficient to carry the blast furnaces tributary to the district well through the winter season. The vessel and mining organizations charged with the responsibility of supplying iron ore to the furnaces in the lake district—where more than 80 per cent of the country's pig iron is produced—have repeatedly proved capable of satisfying that demand. In view of the lessened consumption of ore this winter, the same agencies can be relied upon even more confidently to match in 1918 their satisfactory records of the past.

## Where Real Standardization is Possible

THOUGH there seems to be considerable pertinent argument on both sides of the question as to close standardization of railway car and appliances, manufacturers having much to uphold their side of the case, the matter of steel rails does not offer the same ground for debate. There are only two parties to the question, the steel mills and the railroads. One type of rail, varied only as to weight, would serve all roads and could be made by all mills. Yet there exist a score or more of specifications, the variations being minute differences in measurements of the head, web and flange, differences that seem to everyone except their originators and proponents to be of no consequence. But to keep in the game each rail mill must make and keep ready for use a set of rolls covering each variation set up by any individual road. The tonnage of raw material in the roll yard of any rail mill is tremendous and

The Iron Trade Review

# EDITORIAL

the cost of replacement of worn or broken rolls is a large item of continued and repeated expense.

The American Railway association has established a standard rail which is a composite of much experience and apparently should meet the requirements of all roads. Should the central railroad authority decree the use of this rail it is difficult to discern where anyone would be injured.

The adoption of a single standard rail mill would reduce mill equipment to one set of rolls to cover various weights and cut out the present excessive duplication. This seems a simple action and based on sound economic basis for war times.

## Wider Distribution of War Contracts

AFTER three and a half years of experience in producing the various accessories of warfare—an experience having a greatly accentuated significance since April 6, 1917—manufacturing interests have reasonable grounds for comparing the government's policy of placing huge war contracts with two or three plants, with the fallacy of placing all one's eggs in a single basket. Business men point to the fact that if the huge war contracts now being placed were divided among a greater number of plants, the serious problem of workmen being drawn from plants throughout any one particular field of industry to serve one or two manufacturers with large war orders, would be greatly ameliorated. It is believed that were the contracts distributed more broadcast, a more equitable adjustment of labor demands would result. Orders now being placed doubtless will be followed by others still larger if the war continues. It would be advisable, therefore, to have as many manufacturers as possible in a position to produce the nation's needs instead of depending upon the favored but overtaxed few, providing this can be done without sacrificing the benefits of quantity production. While the question of labor in this regard is the most important one, other advantages are to be found in the proposed wider distribution of war orders. With 10 manufacturers working on a single contract, the delay and loss resulting from a fire or a strike is far less in scope than that obtaining when calamity strikes one of two or three producers working on the same gross contract. Another factor, not to be neglected, is the beneficial effect upon the overstrained transportation system resulting from reducing the size of consignments and scattering them over a wider distributed territory.

## West Relieves Manganese Need

AMONG notable developments of domestic resources hastened by the war is that of the deposits of manganese ore in this country. The assured Cuban production of manganese ore has been disposed of for the remainder of this year. Imports from India, by reason of the scarcity of ships, necessarily are sufficient to take care of only a small percentage of the requirements. The outlook for a continuance of shipments from Brazil is clouded by the embargo against the further movement of ore from the mines to the Brazilian seaboard, an embargo which evidently will not be lifted until that country is assured of a supply of coal from the United States.

The scattered character of the deposits in Virginia makes manganese ore mining in that state an uncertain undertaking and the tonnage produced is not large nor assured. Development of Lake Superior deposits is held up by the lack of methods for concentrating the lean manganiferous ores which abound in that field. Therefore, it is toward the west that the large producers of ferromanganese particularly are turning their eyes at this time. The workability of the ore has been proved and Montana, California and Nevada producers have made sales of important tonnages. The Montana concentrates now being produced from ore low in analysis average around 45 per cent in manganese and 10 per cent in silica. In addition, a considerable tonnage of natural ore containing 40 to 44 per cent manganese and 15 to 20 per cent silica is being mined and sold without concentration. While the silica content is high, the alumina content is very low.

Present opinion among ferromanganese producers is that the high cost of concentration, combined with the heavy freight rates to the east, will prevent western manganese ore from being an important factor under such normal conditions as may be expected to return some time after the war ends. In fact, it seems to be a fair conclusion that western manganese ores are being used only temporarily as a substitute for high grade foreign ore. In this connection the disposition of the estimated 1,000,000 tons of high grade Russian manganese ore at Poti and Batum in the Black sea district is arousing keen interest because of the German-Turkish peace with Russia. Brazilian ore, by reason of the embargo, at any rate is piling up at the points of production and this foreshadows greater offerings as soon as the ocean shipping situation becomes less congested, at prices which will make our own western competition difficult.

# Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 760

## PIG IRON

| | |
|---|---|
| Bessemer, valley | $36.30 |
| Bessemer, Pittsburgh | 37.25 |
| Basic, Pittsburgh | 33.95 |
| Basic, eastern Pa. | 33.00 |
| Basic, Buffalo | 33.00 |
| Malleable, Pittsburgh | 34.45 |
| Malleable, Chicago | 33.50 |
| Malleable, Philadelphia | 34.00 to 37.50 |
| Malleable, Buffalo | 33.50 |

**GOVERNMENT SCHEDULE**

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicon.

| | |
|---|---|
| No. 1X, Phila. | 35.25 to 35.50 |
| No. 2 foundry, Pittsburgh | 33.95 |
| No. 2 foundry, Cleveland | 33.95 |
| No. 2 foundry, Ironton | 33.00 |
| No. 1 foundry, Chicago | 33.50 |
| No. 2 foundry, Chicago | 33.00 |
| No. 2X foundry, Phila. | 34.25 to 34.50 |
| No. 2X foundry N. J. tide | 34.25 to 34.50 |
| No. 2X foundry, Buffalo | 33.50 |
| No. 2 plain, Philadelphia | 33.75 to 34.00 |
| No. 2 plain, N. J. tide | 33.75 to 34.00 |
| No. 2 southern Birmingham | 33.00 to 33.50 |
| No. 2 southern, Cincinnati | 36.40 |
| No. 2 southern, Chicago | 37.50 |
| No. 2 southern, Phila. del. | 38.30 to 39.40 |
| No. 2 southern, Cleveland | 37.50 |
| No. 2 southern, Boston | 39.50 |
| No. 2 southern, St. Louis | 35.90 |
| Virginia, No. 2X, furnace | 33.50 |
| Virginia, No. 2X, Phila. | 36.77 |
| Virginia, No. 2X, Jersey City | 37.02 |
| Virginia, No. 2X, Boston | 37.27 |
| Gray forge, Pittsburgh | 32.95 |
| Silveries, 8 per cent, furnace | 46.00 |
| Silveries, 8 per cent, Chicago | 48.54 |
| Low phos. standard, Phila. | 55.00 to 56.00 |
| Low phos., Lebanon furnace | 50.00 |
| Low phos., Pittsburgh | 53.00 |
| Charcoal, Superior, Chicago | 37.50 |
| Charcoal, Superior, Buffalo | 39.75 |
| Charcoal, southern furnace | 43.00 |

## COKE

(At the ovens)

| | |
|---|---|
| Connellsville furnace | $6.00 |
| Connellsville foundry | 7.00 |
| Pocahontas furnace | 8.00 |
| Pocahontas foundry | 8.00 |
| New River foundry | 8.00 |
| New River furnace | 7.00 |
| Wise county furnace | 6.00 |
| Wise county foundry | 7.00 |

## FERROALLOYS

| | |
|---|---|
| Ferromanganese, delivered. | $250.00 |
| Spiegel, 20 per cent fur. | 70.00 |
| Spiegel, contracts, furnace. | 65.00 to 70.00 |
| Ferrocarbon titanium, carloads, maker's plant | 160.00 |
| Ferrosilicon, 50 per cent, first quarter, Pittsburgh. | 180.00 to 190.00 |
| Ferrosilicon, 50 per cent, Pitts., remainder of 1918 | 155.00 |
| Bessemer ferrosilicon, 9 per cent. | $54.00 |
| Bessemer, ferrosilicon, 10 per cent. | 55.00 |
| Bessemer ferrosilicon, 11 per cent. | 58.30 |
| Bessemer ferrosilicon, 12 per cent. | 61.60 |

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

## SEMIFINISHED MATERIAL

**BILLETS**

| | |
|---|---|
| Open-hearth, Pittsburgh | $47.50 |
| Open-hearth, Philadelphia | 50.50 |
| Open-hearth, Youngstown | 47.50 |
| Bessemer, Pittsburgh | 47.50 |
| Bessemer, Youngstown | 47.50 |
| Forging, Pittsburgh | 60.00 |
| Forging, Philadelphia | 63.00 |

**SHEET BARS**

| | |
|---|---|
| Open-hearth, Pittsburgh | $51.00 |
| Open-hearth, Youngstown | 51.00 |
| Bessemer, Pittsburgh | 51.00 |
| Bessemer, Youngstown | 51.00 |

**WIRE RODS AND SKELP**

| | |
|---|---|
| Wire rods, Pittsburgh | $57.00 |
| Grooved skelp, Pitts. | 2.90c |
| Sheared skelp, Pitts. | 3.25c |

## SHAPES, PLATES AND BARS

(In cents per pound)

| | |
|---|---|
| Structural shapes, Pitts. | 3.00c |
| Structural shapes, Phila. | 3.185c |
| Structural shapes, N. Y. | 3.195c |
| Structural shapes, Chgo. | 3.00c |
| Tank plates, Chicago | 3.25c |
| Tank plates, Pittsburgh | 3.25c |
| Tank plates, Philadelphia | 3.435c |
| Tank plates, New York | 3.445c |
| Bars, soft steel, Pittsburgh | 2.90c |
| Bars, soft steel, Chicago | 2.90c |
| Bars, soft steel, New York | 3.095c |
| Bars, soft steel, Phila. | 3.085c |
| Bar iron, Chicago | 3.50c |
| Bar iron, Phila. | 3.50c to 3.685c |
| Bar iron, Cleveland | 3.64c to 3.70c |
| Bar iron, New York | 3.695c |
| Bar iron, Pittsburgh | 3.50c |
| Hard steel bars, Chicago | 3.00c |

## RAILS, TRACK MATERIAL

| | |
|---|---|
| Angle bars, Pittsburgh base. | 3.25c |
| Angle bars, Chicago base | 3.25c |
| Standard bessemer rails, mill | $55.00 |
| Stand. open-hearth rails, mill | 57.00 |
| Light rails, 25 to 45, mill | 3.00c |
| Relaying rails, light, St. L. | 60.00 to 67.00 |
| Spikes, railroad, Pitts. | 3.90c |
| Track bolts, Pittsburgh | 4.90c |
| Track bolts, Chicago | 5.115c |
| Tie plates, Chicago | 3.25c |

## WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

| | |
|---|---|
| Wire nails, Pittsburgh | $3.50 |
| Coated nails, Pittsburgh | 3.45 |
| Plain wire, Pittsburgh | 3.25 |
| Galvanized wire, Pittsburgh | 3.95 |
| Polished staples, Pittsburgh | 3.65 |
| Galvanized staples, Pbgh. | 4.35 |
| Barb wire, painted, Pitts. | 3.65 |
| Barb wire, galvanized, Pitts. | 4.35 |
| Cut nails, Pittsburgh | 4.00 |

## CHAIN, PILING, STRIP STEEL

(In cents per pound)

| | |
|---|---|
| Chain, ⅜ in. proof coil, Pitts. | 8.00c |
| Sheet piling, base, Pitts. | 4.00c to 5.00c |

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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## SHEETS

(In cents per pound)

**SHEET MILL BLACK**

| | |
|---|---|
| No. 28, open-hearth, Pitts. | 5.00c |
| No. 28, bessemer, Pitts. | 5.00c |
| No. 28, open-hearth, Chi. | 5.215c |

**TIN MILL BLACK**

| | |
|---|---|
| No. 28, open-hearth, Pitts. | 5.00c |
| No. 28, bessemer, Pitts. | 5.00c |

**GALVANIZED**

| | |
|---|---|
| No. 28, open-hearth, Pitts. | 6.25c |
| No. 28, bessemer, Pitts. | 6.25c |
| No. 28, open-hearth, Chi. | 6.465c |

**BLUE ANNEALED**

| | |
|---|---|
| No. 10, open-hearth, Pitts. | 4.25c |
| No. 10, bessemer, Pitts. | 4.25c |
| No. 10, open-hearth, Chi. | 4.465c |
| No. 10, open-hearth, Phila. | 4.435c |

## TIN PLATE

(Per 100 lb. box)

| | |
|---|---|
| Tin plate, coke base, Pitts. | $7.75 |

## IRON AND STEEL PIPE

**Base Pittsburgh**

| Base Pittsburgh | Black Per cent off | Galv. Per cent off |
|---|---|---|
| ⅛ to 3 in., butt, steel | 51 | 37½ |
| ¼ to 3 in., butt, iron | 33 | 17 |

## BOILER TUBES

| | |
|---|---|
| Steel, 3½ to 4½ inches, l. c. l. | 30 |
| Iron, 3½ to 4½ inches, c. l. | 12½ |

## CAST IRON WATER PIPE

(Class B Pipe)

| | |
|---|---|
| Four-inch, Chicago | 57.30 |
| Six-inch and over, Chicago | 54.30 |
| Four-inch, New York | 58.35 |
| Six-inch and over, N. Y. | 55.35 |
| Four-inch, Birmingham | 52.00 |
| Six-in. and over, Birmingham | 49.00 |

## HOOPS, BANDS, SHAFTING

Class A pipe is $1 higher than Class B.

| | |
|---|---|
| Hoops, Pittsburgh | 3.50c |
| Bands, Pittsburgh | 2.90c |
| Shafting, Pitts., carloads | 17 off to list |

## RIVETS

| | |
|---|---|
| Structural rivets, Pittsburgh. | 4.65c |
| Boiler rivets, Pittsburgh | 4.75c |
| Rivets ⅞ in. and smaller, Pitts. | 45 and 10 off |

## NUTS AND BOLTS

(Delivered within 20-cent freight radius)

**CARRIAGE BOLTS**

(½ x 6 inches, smaller and shorter)

| | |
|---|---|
| Rolled thread | 50–5 off |
| Cut thread | 40–10–5 off |
| Larger and longer | 40 off |

**MACHINE BOLTS**

(½ x 4 inches, hot pressed nuts)

| | |
|---|---|
| Rolled thread | 50–10–5 off |
| Cut thread | 50–5 off |
| Larger and longer | 40–10 off |
| Cold pressed semi finished hexagon nuts ½ in. and larger | 60–10–10 off |
| Cold pressed semi finished hexagon nuts ⅞ in. and smaller | 70–5 off |
| Gimlet and cone point lag screws | 50–10 off |

**NUTS**

| | |
|---|---|
| Hot pressed, square blank | 2.50c off |
| Hot pressed, square tapped | 2.30c off |
| Hot pressed, hexagon blank | 2.30c off |
| Hot pressed, hexagon tapped | 2.10c off |
| Cold pressed, square blank | 2.25c off |
| Cold pressed, square tapped | 2.00c off |
| Cold pressed, hexagon blank | 2.25c off |
| Cold pressed, hexagon tapped | 2.00c off |

## Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

**Quotation on leading products March 20, average for February, 1918, average for December, 1917, and average for March, 1917. Prices are those ruling in the largest percentage of sales at the dates named**

| | Prices March 20, 1918 | Average prices Feb., 1918 | Dec., 1917 | Mar., 1917 |
|---|---|---|---|---|
| Bessemer pig iron, Pittsburgh.. | $37.25 | $37.25 | $37.25 | $37.45 |
| Basic pig iron, Pittsburgh.... | 33.95 | 33.95 | 33.95 | 32.85 |
| *No. 2 Foundry pig iron, Pitts. | 33.95 | 33.95 | 33.95 | 36.55 |
| *No. 2, Foundry pig iron, Chi. | 33.00 | 33.00 | 33.00 | 35.70 |
| Lake Superior charcoal, Chicago | 37.50 | 37.50 | 37.50 | 37.55 |
| Malleable, Chicago ..... | 33.50 | 33.50 | 33.50 | 35.70 |
| **Southern, No. 2, Birmingham | 33.50 | 33.50 | 33.50 | 28.00 |
| *Southern Ohio No. 2, Ironton | 33.00 | 33.00 | 33.00 | 36.00 |
| Basic, eastern Pa..... | 33.00 | 33.00 | 33.00 | 34.50 |
| **No. 2X Virginia, furnace.... | 33.50 | 33.50 | 33.50 | 34.00 |
| **No. 2X foundry, Philadelphia | 34.25 | 34.25 | 34.00 | 37.25 |
| Ferromanganese, delivered..... | 250.00 | 250.00 | 247.50 | 275.00 |
| Bessemer billets, Pittsburgh.... | 47.50 | 47.50 | 47.50 | 67.00 |
| Bessemer sheet bars, Pittsburgh | 51.00 | 51.00 | 51.00 | 67.00 |
| Open-hearth sheet bars, Pitts.. | 51.00 | 51.00 | 51.00 | 67.00 |
| Open-hearth billets, Pitts..... | 47.50 | 47.50 | 47.50 | 67.00 |
| Steel bars, Pittsburgh..... | 2.90 | 2.90 | 2.90 | 3.20 |
| Steel bars, Chicago..... | 2.90 | 2.90 | 2.90 | 3.40 |
| Iron bars, Philadelphia..... | 3.50 | 3.50 | 3.685 | 3.509 |
| Iron bars, Cleveland..... | 3.64 | 3.64 | 3.64 | 3.00 |

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

| | Prices March 20, 1918 | Average prices Feb., 1918 | Dec., 1917 | Mar., 1917 |
|---|---|---|---|---|
| Iron bars, Chicago mill..... | $3.50 | $3.50 | $3.50 | $3.00 |
| Beams, Chicago ..... | 3.00 | 3.00 | 3.00 | 3.65 |
| Beams, Pittsburgh ..... | 3.00 | 3.00 | 3.00 | 3.45 |
| Beams, Philadelphia ..... | 3.185 | 3.185 | 3.185 | 3.759 |
| Tank plates, Pittsburgh..... | 3.25 | 3.25 | 3.25 | 4.20 |
| Tank plates, Chicago..... | 3.25 | 3.25 | 3.25 | 4.60 |
| Tank plates, Philadelphia..... | 3.435 | 3.435 | 3.435 | 5.659 |
| Sheets, blk., No. 28, Pitts..... | 5.00 | 5.00 | 5.00 | 5.05 |
| Sheets, blue anld., No. 10, Pitts. | 4.25 | 4.25 | 4.25 | 4.70 |
| Sheets, galv., No. 28, Pitts..... | 6.25 | 6.25 | 6.25 | 6.70 |
| Wire nails, Pittsburgh..... | 3.50 | 3.50 | 3.50 | 3.15 |
| Connellsville furnace coke..... | 6.00 | 6.00 | 6.00 | 7.60 |
| Connellsville foundry coke..... | 7.00 | 7.00 | 7.00 | 6.90 |
| Heavy melting steel, Pitts..... | 30.00 | 30.00 | 30.00 | 23.40 |
| Heavy melting steel, eastern Pa. | 30.00 | 30.00 | 28.75 | 23.75 |
| Heavy melting steel, Chicago.. | 30.00 | 30.00 | 28.90 | 23.00 |
| No. 1 wrought, eastern Pa..... | 35.00 | 35.00 | 35.00 | 30.50 |
| No. 1 wrought, Chicago..... | 35.00 | 35.00 | 34.75 | 28.85 |
| Rerolling rails, Chicago..... | 35.00 | 35.00 | 35.65 | 27.25 |
| Car wheels, Chicago..... | 30.00 | 30.00 | 30.75 | 20.30 |

(For Additional Prices See Page 760)

# Iron Makers Deluged With Inquiry

### Consumers Becoming More Apprehensive Over Supplies as Repeated Efforts to Obtain Tonnage Prove Unsuccessful—40,000 Basic Requirement Put Up to Government—Commandeering Becoming Necessary to Satisfy Allocations

Pittsburgh, March 19.—Interest in the pig iron industry is centered in the conference tomorrow at Washington between the committee on iron and steel products of the American Iron and Steel institute and the war industries board. Evidently there can be no forehanded knowledge as to what action will be taken. Talk regarding the outcome of the conference necessarily is confined to speculation and is conflicting. The prevailing sentiment is, however, that the board will reaffirm existing levels. Moreover, it is desired that the prices, when determined upon, be allowed to continue in effect from April 1 to the remainder of the current year in order to stabilize the market. Inquiries for iron still are numerous, but practically no sales are being made. Furnaces are well committed either for the entire last half or for as long a period as they are willing to obligate themselves. Basic is in most pressing demand. One Pittsburgh steelmaker who inquired for 15,000 tons monthly for the last half as well as for prompt iron has been able to obtain only a relatively small lot. The Pennsylvania railroad is asking for 11,000 tons of low silicon foundry. The Pressed Steel Car Co. is seeking 8000 tons of low silicon foundry and will accept a high sulphur content. Prompt delivery is wanted on this off iron, which is for the production of car wheels. In addition, this maker is seeking old car wheels, but there is an extreme scarcity of these.

#### Low Phosphorus Sales Heavy

Philadelphia, March 18.—Large sales of copper-bearing, low-phosphorus iron made up the principal business of the past week in the pig iron market in this district. These sales embraced at least 20,000 tons, largely for second half. The largest purchase was by an eastern Pennsylvania consumer who took 10,000 tons for the remainder of the year from one producer, and 2500 tons for last quarter from another. Several smaller tonnages were sold for second quarter and second half. Current inquiry for copper-bearing, low phosphorus invoices at least 25,000 tons. Other requirements are in sight. The output of copper-bearing low phosphorus now is sold up for the first half. Inquiry for all grades of pig iron has undergone marked expansion. This is particularly true of foundry. Only a small fraction of the eastern foundry output prior to July 1 still is unsold and there is much speculation as to how the large requirements which are wanted for quick shipment can be met. The Baldwin Locomotive Works wants 3000 tons of cylinder grade and 3000 tons of floor grade, deliveries to start immediately. Many smaller, but equally pressing tonnages are wanted by belated consumers. Large second half inquiries for foundry also are out, including one from the Pennsylvania railroad for 1100 to 1200 tons of high manganese, 1000 to 2100 tons of 1 to 1.25 per cent silicon and 4500 to 9000 tons of 2.50 to 3 per cent silicon, for last half, one for 5000 to 6000 tons of foundry for last half shipment to the Ridgeway, Pa., plant of the Niles-Bement-Pond Co., and others.

#### Allocations More Difficult

Cleveland, March 19.—Allocations of pig iron for government purposes are

being made with greater difficulty. Early deliveries especially are becoming more out of the question and it is the opinion of those who are directing this distribution that consumption of tonnage already sold is near at hand; in fact, from all practical considerations, it already is taking place. Southern furnaces are being looked to more and more to fill up the gap in northern requirements, especially in basic. It is not believed the higher phosphorus content of southern iron will present any serious obstacles to its use by plants which never before have included it in their mixtures. A lot of 300 tons of No. 2 soft for the American expeditionary force in France is expected to be taken by Alabama makers. For Burlington, Iowa, 300 tons of foundry are wanted for June-August delivery, for government purposes. The Italian government has 2000 tons of bessemer for March-June delivery up for allocation. In the open market, the condition continues where makers are obliged to turn down weekly heavy requests for tonnage. Even long-standing customers have only been allowed a portion of their last half requirements and are in serious doubt where they will obtain the remainder.

### Inquiries Bring No Response

Boston, March 18.—There are plenty of inquiries for iron, not only for prompt, but also for second half, but actual business does not foot up large. There is almost no nearby or spot iron available and the furnaces are not much inclined to consider business for the second half until they have made further inroads on standing contracts. A 500-ton inquiry is reported for prompt shipment with no takers. A New Hampshire melter is in the market for 1500 tons of second half malleable, but up to Monday noon, there had been no responses to this inquiry. This consumer has been hard put for iron supplies lately and was able to keep going only by securing 150 tons from another user. On a sale of 400 tons of Alabama special analysis iron, the buyer agreed to secure the necessity government permit. Deliveries on contracts are reported to be good from the Buffalo district but only fair from other regions. From Virginia, they were running good recently, but have been poor the past week. Furnaces located along the Norfolk & Western have done fairly well but those on the Pennsylvania have been hampered by the heavy movement of coal. The New Haven embargo imposed March 12 also still is in force. The reaction in the deliveries likewise is charged to the fact that too many government permits were issued at the same time and as they were good for only two weeks, they expired before they could be honored. Few furnaces on account of the lack of cars could do better than ship half the quantity of iron called for. Indeed, they were swamped and prorating was necessary.

### Makers Are Swamped

Buffalo, March 19.—Makers of iron in this district are being swamped in the maelstrom of inquiry but have only meager quantities to sell. For every ton that is shipped, there are a score of other places it might have gone. Instead of inquiring for a specific tonnage, buyers ask "How much can you let us have?" One seller who has no iron to sell and may not have any for the balance of the year if coke conditions do not improve, stated that there was inquiry for 1000, 2000 and 3000-ton lots, and that the aggregate was "thousands and thousands" of tons. Though no Buffalo maker appears to have closed with the Gould Coupler Co. for 15,000 tons of basic, the inquiry is understood to have been satisfied. The Depew company is said still to be in the market for 2000 tons of March-April malleable. Demand for malleable has been heavy lately and one furnace which was running on low silicon has switched to that grade. One maker reports that 95 per cent of all inquiry is being turned down. Coke conditions are still bad though the car supply has improved a little and some headway is being made on old orders. There is some perturbation among producers here owing to the government ordering the diversion of coke supplies which would ordinarily come to them. This is being done, it is said, despite the fact that at least one interest is running 100 per cent on government orders. If the government revises prices downward at least one interest in this district which operates an out-of-town plant states it will have to cease making iron. One of the furnaces of this interest will go on ferromanganese in 60 days and the other if a lower iron price is made. A government allotment of 500 tons of basic was made to a local furnace during the week.

### Chicago Out of Market

Chicago, March 19.—Quietness prevails in the pig iron market here except for the importunities of melters who have failed to cover their requirements and find producers practically sold out. This applies particularly to malleable and basic users, many of whom have covered only a part of their requirements. Local producers have sold as fully as they dare for the remainder of the present year. With production under normal because of fuel difficulties and with the government placing added tonnages from time to time, it is difficult to gage the available iron for other users. The large tonnage of basic recently asked by a St. Louis melter is not known to have been placed. Lake Superior charcoal iron makers appear to have covered their entire 1918 production. The last large tonnage remaining has been apportioned among regular customers in a way to serve the industry to the best advantage. Poor quality of coke is causing considerable production of high-sulphur iron but this is being sold readily at the maximum price for regular iron, except that 50 cents is allowed where the sulphur runs unusually high. Melters are using this iron with their regular grades without difficulty. Recent offerings showed a range of 0.054 to 0.19 sulphur. Southern sellers are taking littel iron. Those users who have been unable to cover from usual sources find it difficult to obtain tonnage south of the Ohio river. Low phosphorus and silveries are also scarce and buyers are able to get little satisfaction from makers. The western maker of low phosphorus is relining his stack.

### Southern Basic Purchased

Cincinnati, March 18.—The scarcity of steelmaking iron is a matter of much concern. Basic users in this vicinity have quietly purchased some iron in the south, but how much is yet unknown. One Ohio river buyer was in the market for 20,000 tons for last half. It is a matter of considerable speculative interest as to how much basic can yet be sold by southern furnaces for this year's shipment. Inquiries that have been pending for some time are only partly closed and some further orders are expected, provided they can be taken care of by producers in that district. Foundry iron has not sold very freely within the past few days. About the only district to draw from is the south, with a few cars of prompt iron that can be picked up occasionally in Virginia. Nothing can be had in silicon iron are turning elsewhere for a supply.

### Basic Tonnage Going Begging

St. Louis, March 16.—Users of pig iron in this district are beginning to note tendencies of shortage with increasing alarm. Certain important melters are frank in their declaration that they do not know where or how they are to get supplies to carry them

through 1918. Others express confidence that the furnaces which have always served them will see them through this emergency. The latter declare they have no definite assurances, and further are not acquainted with the booked condition of the furnaces. The fact remains, however, that there is a present scarcity, which appears to be growing. An inquiry from a local steel casting plant for 40,000 tons of basic has gone begging, although wanted for war work.

The main producer in this district has turned down the inquiry, for the reason that his capacity is contracted for throughout the year, and thus far outside makers have not accepted the order. Basic is particularly scarce, though from what could be learned this week, it is almost as hard to obtain malleable and other grades. Reports that the south is offering more foundry iron than would have been thought possible the first of this month, cannot be verified here. Representatives of the Alabama producers are offering little for any delivery. The net result of the uneasiness relative to future supplies is a disposition to draw in on the matter of future business. Fuel conditions have improved somewhat, and also transportation conditions are somewhat better than last week.

### Withdrawing from Open Market

Birmingham, Ala., March 19.—Furnace companies in the Birmingham district practically are withdrawing from the open market. There is some selling to regular customers for delivery during the last half of the year, and then in only small lots. Production and delivery continue to receive principal attention and practically no effort whatever being given to the selling. Concentration on production and deliveries is not bringing forth full realization. Coal, coke, ore and other raw materials are none too liberal though the weather conditions are ideal. Embargoes still are effective in some of the larger territories. The railroad car service in home territory or in that immediately adjacent thereto has shown much improvement lately. Though there is still confidence that the government revision, expected this week, will not be downward, much interest is being manifested. It is believed considerable new inquiry will be forthcoming after the price announcement is made. Sales already made will take up considerable of the expected output during the last half of the year. Some furnaces have sold off-grades in quantity as well as low grades as there is a demand for any and all kinds of metal.

# More Coke Commandeered

## Fuel Administration Directs Approximately 30,000 Tons Monthly be Sent to Two Eastern Consumers—Will License Jobbers

Pittsburgh, March 19.—More coke tonnage from the Connellsville region has been commandeered by the federal fuel administration for eastern furnaces. The W. J. Rainey interests have been requested to furnish a 100 per cent supply to the Alan Wood Iron & Steel Co., Ivy Rock, Pa., and the E. & G. Brooke Iron Co., Birdsboro, Pa. This will involve approximately 30,000 tons monthly and probably will mean that shipments on contracts by this producer with other furnaces will have to be cut down accordingly. Slight improvement in the car supply in the Connellsville region continues to be made. The supply on the Monongahela railroad yesterday and today and that in prospect for tomorrow indicates an increased average for the three days over last week when it was 47 per cent better than the preceding week. A more promising situation also is reflected on the Pennsylvania railroad and its placements on the Monongahela have increased. A decided improvement has been made in shipments on contracts. While the supply of cars on the Pennsylvania railroad is more nearly satisfactory, it continues to be limited and is due almost entirely to the excess number of open-top, free-dumping cars in the east. This situation was brought about as a result of the heavy movement of coal to tidewater and to the New England district. It appears that motive power available is not sufficient to get empties back to the coal and coke districts except in small numbers. On April 1 the fuel administration will begin to issue licenses to legitimate jobbers and dealers in coal and coke. So far as the coke business is concerned, nothing will be done in the way of allowing commissions to middlemen. This step has been decided upon by the fuel administration in order to regulate further both industries. During the week ended March 9 production in the Connellsville region totaled 314,409 tons, as compared with 285,828 tons for the preceding week, according to *The Connellsville Courier*.

### Aid Steelmaking Interests

Philadelphia, March 18.—The commandeering of furnace coke the past week for the E. & G. Brooke Iron Co. and the Alan Wood Iron & Steel Co. is aimed to maintain a supply of steelmaking iron for certain works producing war tonnage. The Alan Wood company is making basic for its own consumption, and the Brooke company is producing this grade for the Lukens Steel Co. and other steel companies. A large tonnage of foundry coke also has been commandeered for an important eastern Pennsylvania locomotive builder. This is the first case where foundry coke has been commandeered in this district.

### Run Close to Danger Line

Cincinnati, March 18.—Some exasperating delays are experienced in shipping coke that are caused in many instances by the insufficient labor at the ovens. Reports received from oven operators are not at all complimentary as to the class of floating labor that is necessary to be employed from time to time. In some cases it is said that warmer weather has reduced the efficiency of common labor, and especially that in loading cars. The car supply is improving. The movement of shipments also is more prompt. However, foundries are not storing enough coke to keep them operating very far ahead of the danger line and the furnaces are not in much better shape.

### Demand Far Exceeds Supply

St. Louis, March 16.—Aside from a slight improvement in deliveries the past week has developed nothing worthy of note in the coke situation. The demand continues vastly in excess of available supplies. Spot sales are confined to a few scattering cars, and there is also very little doing in future business. Best posted factors in the trade estimate that deliveries on material from the Connellsville and Virginia districts have increased about 10 per cent this week, bringing them up to about 60 per cent of normal. The mills and foundries here are doing fairly well, only a few reporting shutdowns, which have been short. Smelters to the southwest are suffering increasingly for lack of coke, and conditions in the west are about the worst since the war started. Deliveries by producers in the St. Louis district proper are running around par, and this is largely accountable for the relative ease with which local plants are weathering the shortage. The leading plant has been disposing currently of a small production in excess of contract supplies.

# Report Excess Price Paid

## Eastern Dealer Offers More Than Government Maximum for Shell Turnings and Disturbs Situation—More Scrap Weakness Develops

FOR COMPLETE SCRAP PRICES SEE PAGE 760

Buffalo, March 19.—The demand for scrap in this territory is strong and shipments are a little easier. There is a pronounced scarcity of heavy melting steel, the available supply in this territory not being ample to supply the local demand. Producers and dealers are disturbed over a development of the week. Some producers of shell turnings have received within the past 10 days a letter from a large eastern scrap house intimating that it is permitted to pay for steel turnings for special purposes a price in excess of the maximum base announced Feb. 21, and it is understood that prices have been paid for shell turnings above $25 at consuming point. This is being done in the face of a ruling made several weeks ago by the chairman of the American Iron and Steel institute that only first and second cuts of shell turnings could be sold at $25. Such a procedure, dealers and producers say, threatens to disrupt the existing schedule. The letter below quoted appears to be issued with authority and has the injurious effect of creating the sentiment among producers that the radical change is contemplated of allowing shell turnings to come under the classification of low phosphorus steel scrap. The letter follows: "We are in the market for guaranteed low phosphorus steel turnings, 0.04 and under in phosphorus and sulphur, and it occurs to us that your shell turnings may come within our requirements, provided they do not contain a noticeable copper content. For this special purpose, we are permitted to pay a price in excess of the maximum base price fixed by the President, or the differentials as announced by Judge Gary on Feb. 21. Therefore if you are not under contract, we would like to enter into negotiations with you."

### Car Wheels Bought Up

Boston, March 16.—Shipping facilities have improved to a point where there is a practically normal movement of scrap to the big consuming centers, most of which are outside New England. This movement largely represents old business, which was tied up by the transportation tangle. There is a fairly good current demand for everything except cast scrap, and in that class cast iron car wheels must be excepted. The big local car wheel plant is so short of pig iron and is experiencing so much difficulty in securing supplies, that it is taking and using about all the old wheels that are offered. It is paying the government maximum of $30, thus crowding out the dealers who cannot sell above that price.

Not a little scrap businesss has been done on the basis of government prices plus commissions. Local prices are unchanged and are firm, save in cast scrap. Wholesale dealers' paying prices per gross ton, f.o.b. shipping point, follow:

Wrought No. 1, yard long, $30 to $31; horseshoes, $30 to $31; cotton ties, $22 to $23; stove plate, $20 to $20.50; No. 1 machinery, $32 to $33; No. 2 machinery, $28 to $29; car axles, iron, $43 to $44; car axles, steel, $43 to $44; rerolling rails, $31 to $32; bundled barrel hoops, $17.50 to $18; iron boiler plate, $34 to $35; wrought iron pipe, new specific, $28 to $29; steel rails, $26 to $27; No. 1 railroad steel, $26.50 to $27; heavy melting steel, $25.50 to $26.50; axle turnings, $21 to $21.50; machine shop turnings, $15 to $16; cast borings, $16 to $17; drop forge trimmings, $23 to $24; cast iron car wheels, whole, $30; cast iron car wheels, broken, $35.

### Market Weak in East

Philadelphia, March 18.—Pronounced weakness has characterized the scrap market in this district, due to the continued lack of interest by consumers. Although plant operations now are better, the supply of scrap has broadened to such an extent that there is more than enough to go around. As a result, consumers are showing very little interest in new purchases, and they are rigidly inspecting all shipments, so that rejections are more numerous. This development is a welcome one to dealers, who in the absence of a definite ruling, as long as prices were at maximum levels, were unable to charge a commission. The long-continued delay of the American Iron and Steel institute in acting on commissions is proving very embarrassing. Dealers have many contracts pending on which they do not know whether or not they will be entitled to charge a commission. Although a small tonnage of heavy melting steel sold last week at $30, delivered, sales since have been made to dealers at $28.50, and consumers' ideas now are no higher than $29, delivered. No. 1 forge and machine shop turnings are down $1, and No. 1 cupola cast, $2.

### Steel Scrap Weakens

New York, March 19.—Weakness is being shown in steel scrap in the east, and as a result prices on a few descriptions have undergone a decline. Less difficulty in shipping to nearby points, and the lower rates, have given the mills in the east a decided preference over those in the west. It now appears that the eastern mills are in a fairly comfortable position. No. 1 steel for eastern consumption now is being quoted at $26.75, New York, a decline of about $1, while old steel shafting and city wrought, short stock, have had a similar drop and are being held at $36.50 and $26.75, respectively. Despite the much freer movement of scrap generally owing to the improvement in transportation, other grades are holding firm. No. 1 cast scrap continues particularly strong. Consumers in some instances are paying the 3½ per cent commission.

### Pittsburgh Market Dull

Pittsburgh, March 19.—Despite the improvement in the railroad situation, dealers in iron and steel scrap report that it is more difficult to make shipments today than it was two weeks ago. Permits are not being issued so freely and in consequence deliveries are slow. Business by dealers and brokers is being confined exclusively to shipments on old contracts. No new sales are being made. The market has been brought to a halt by the lack of an official interpretation on the commission question. It was expected that an announcement on this subject would be made by this time. Dealers are not making any offerings. It is evident that consumers are dealing quite extensively with producers.

### Market is Stagnant

Cleveland, March 20.—Scrap dealers in this district are resigned to a life of inactivity pending an announcement of the new scrap prices effective March 31. Since American Iron and Steel institute has let the commission matter rest so far, dealers here believe this point will be covered in the new announcement. Stagnation more marked than any in recent years pervades the local market. Even trading in low phos has fallen away off. Producers are unwilling to sell until they know exactly where they

are at. One dealer claims to have sold 100 tons of No. 1 cast, cupola size, at $35; this is the first and only sale of this grade reported in this district to date. The only important railroad list out in this district is one of the Michigan Central. It has been definitely decided that the next meeting of central district members of the American Board of Scrap Iron Dealers will be held April 15 at the Hotel Statler, Cleveland.

### Chicago Demand Strong

Chicago, March 19.—Although some deterring effect is exerted in the scrap market by the imminence of a possible change in maximum quotations, considerable activity is manifested by consumers and demand is strong. This is having the effect of increasing quotations on such grades as have not yet reached the maximum. Malleable scrap, busheling, light cast, locomotive tires and arch bars and transoms all are up within the past few days. Scarcity continues in most lines. Much less scrap is coming out than is usual at this season. Considerable dissatisfaction exists among producers and dealers, who feel that maximum prices were decided without sufficient consideration of that feature of the situation. The distinction between cast scrap for open-hearth and cupola use is diverting small cast to foundry use and steel mills are receiving nothing but the heavier prices, which must be broken.

### Prices Are Mixed

Cincinnati, March 18.—Not much difference in quotations seems to exist between different markets, as far as the government's figures are concerned. But the buying prices of dealers in this territory seem to be somewhat mixed. Scrap that is used nearby is bringing close to the regular schedule less the freight rate to the largest consuming center which is Pittsburgh. How long this condition will keep up is problematical.

### Western Roads Keep Old Plan

St. Louis, March 16.—According to certain dealers here, the market has reached a point where it is possible to purchase and ship profitably to other points. The railroad offerings of the preceding week have all been disposed of, which has had a tendency to soften prices. Stocks with the principal melters are light, and owing to transportation dislocation several of them have been obliged to enter the market to piece out contracts. A canvass of several of the purchasing agents of railroads has been made.

# War Sheet Buying Brisk

**Mills Receive Various Tonnages of Roofing and Siding Material—Operations Better But Still Far Below Normal**

Youngstown, O., March 20.—Orders for several thousand tons of various grades of sheets have been placed by the government with valley mills. The greater part of the allotments call for galvanized grades of various sizes and gages. It is understood they will be used for roofing and siding the ammunition depots, airplane sheds and other buildings now under construction in this country. The orders range from 200 to 800 tons of each gage specified. One mill closed for 2000 tons this week and 1500 tons last week. Shipment will extend over two to three months. Other mills received a proportional allotment. Sales managers contemplate another allotment in the near future.

As a result of the heavy demand made on the sheet mills in this district by the government, some makers are closing only light tonnages of new business and are making only partial shipments of orders already booked. Producers with government orders have been assured of an adequate supply of sheet cars. Domestic demand for black and blue annealed is exceedingly heavy and in several cases the specifications were returned to the prospective buyer because the mill was unable to promise an early delivery due to urgent government business. The general concensus of opinion of the sheetmakers in this district is that the prevailing prices of sheets will stand after April 1. The producers state the cost of production has mounted since the prices were last fixed.

### Mill Operations Increase

Pittsburgh, March 19.—Operations of sheet mills in this district have increased somewhat during the past week. The output, however, is far below capacity and the average perhaps is not in excess of 60 per cent. This is due to the small supply of cars and the shortage of sheet bars. Operations of the mills are irregular, and some of them apparently have much less difficulty than others in getting cars. The government continues to take large tonnages of sheets and makers appear to be further behind than ever on deliveries to domestic consumers. Some business which was to have been shipped by July 1 probably cannot be delivered before Sept. 1. No comment is heard in the trade regarding the forthcoming fixing of prices by the government. The levels established on Nov. 5, 1917, were a disappointment to some producers, and it is contended, particularly in the case of galvanized sheets, that the price of 6.25c, Pittsburgh, for No. 28 gage is not adequate.

### Western Demand Steady

Chicago, March 19.—Makers of steel sheets find buyers ready to take large tonnages, provided they could obtain them. Present conditions being well known, actual inquiry is not strong and sales are being made only to the government and to agricultural implement makers, who are being given some preference. Other domestic buyers asking sheets for nonessential purposes, from the war point of view, are not being given consideration. Strong demand for export sheets continues.

## Indian Ore Sold

New York, March 19.—Several hundred tons of Indian manganese ore which now are afloat to this country, have been sold at $1.35 per unit at tidewater. Negotiations for large tonnages of high grade South American manganese ore for second half delivery now are in process. Consummation of this business is held up pending assurances from the government that vessels will be available for the transportation of this ore.

## Sends Buyer to America

An announcement has been made by Philippe Berger, 2 Square De L'Opera, Paris, exporter and importer, that its representative, Leon Belge will be at the Hotel Biltmore, New York, during April and May, where he will supervise the buying of machinery and equipment. Mr. Belge also will consider any propositions that are presented to him by manufacturers for introducing special lines of equipment into Europe.

## Tin Mill About Ready

By April 1, the Liberty Steel Co., Warren, O., expects to have its tin plate mill in operation. The unit comprises eight mills with an annual capacity of 600,000 base boxes of tin plate. Four additional mills to increase that capacity to 1,000,000 boxes a year are contemplated. At the company's recent annual meeting, officers and directors were re-elected.

# Seeking Bars for Export

**Offers Up to 3.60c, Chicago, Made for Foreign Delivery—Old Tonnage Cleaned Up—Shafting Tonnages Demanded**

Chicago, March 19.—Although steel mills are heavily obligated for domestic supplies of steel bars, buyers for export continue to seek out possible sources of material, and offers as high as 3.60c, Chicago mill, have been made recently. Mills are not now accepting business except for government purposes and for agricultural implement makers, although the latter's needs are fairly well covered by recent buying. Demand for bar iron is steady, chiefly for small lots and prompt delivery. Activity seems to be on the increase but there is no tendency on the part of buyers and sellers to contract for future delivery. Mills for the most part have contracts for about six weeks' rolling and new business about balances shipments. Bar mills which have been interfered with by lack of fuel are receiving supplies and operating at normal rate. In hard steel bars rerolled from rails, the demand is becoming somewhat heavier than can be filled from the present supply of rerolling rails. Inquiries are received from consumers who usually buy from other producing centers but local mills are unable to take on this business. Scarcity of rerolling rails is becoming acute.

### Some Tonnages Are Sought

Pittsburgh, March 19.—Small lots of steel bars are involved in inquiries which are coming to makers in this district. A builder of coal mine cars is asking for 1600 tons and a nut, bolt and rivet producer for 1100 tons. Producers are well filled with contracts for the next two or three months and there is not much available tonnage offered. Operations which had been curtailed owing to the shortage of cars again are increasing and mills will be in a position to take care of large requirements which the implement trade is expected to make before long.

### Automobile Trade Interested

Pittsburgh, March 19.—The automobile trade has begun to take moderately sized tonnages of flat steel and mills are making fairly prompt shipments. Prices range up as high as 4.50c per pound, Pittsburgh, the government base. Fairly good demand is coming from makers of oil barrels for hoop steel and deliveries on these tonnages have been promised in from 30 to 60 days. Mills, however, have become so well booked that business taken from now on will call for shipments in from 60 to 90 days. The market for bands is quiet and the government classification on this product which provides a level of 2.90c, Pittsburgh, is said to be so low that small producers have been forced out of the market. When good sized tonnages are sold they go as a general thing to consumers of strip steel at a price ranging from 4c to 4.50c.

### Old Orders Cleaned Up

Cleveland, O., March 19.—Shipments from the mills have shown much improvement. Some of the makers have made much progress in cleaning up old orders by following the policy of shipping tonnages as fast as available and to the maximum quantity at which the consumers could accept them. Accordingly there is greater latitude in taking new business from regular customers, though no contracts are being accepted. A Canton producer, starting up its 22-inch mill, announces that it will roll rounds and squares of from 1½ to 6 inches either from billets or blooms from its own steel plant or from those to be furnished by the buyer. An order for 500 tons of screw stock for a northern Ohio maker of war material has been arranged for. It is understood that the British aviation service is preparing to place orders for airplane parts in considerable quantity in this country.

### Starting New Mill

Buffalo, March 19.—The new bar mill of the Donner Steel Co. with a daily capacity of 400 tons is expected to go into operation on Wednesday of this week. Bar inquiry keeps up. One Buffalo mill entered 400 tons in miscellaneous business during the week.

### Shafting Tonnage Wanted

Pittsburgh, March 19.—The market for cold rolled shafting is dull and reflects less activity than has been manifested for some time. It is understood, however, that the government soon will come into the market for requirements involving about 20,000 tons. A recent inquiry put out for the government for 7000 tons for use by an Ohio consumer has been allocated among makers. The domestic market is expected to remain quiet until after the government has acted upon prices on April 1. Prompt sales are made at the fixed level of 17 off to list, Pittsburgh, and better output has made it possible for producers to make more satisfactory delivery to private consumers. Most of the tonnage taken by them is for second quarter.

### Shipments Are Delayed

Pittsburgh, March 19.—Scarcity of cars is making it difficult for producers of nuts, bolts and rivets to ship tonnages. The shortage is extremely acute some days, only to be followed by a much better supply. The government continues to buy freely but has not placed any large orders during the past week. The domestic market is brisk and consumers in this district are especially active in buying. Deliveries on this business are being made in 30 to 60 days.

### Cotton Tie Price Uncertain

Pittsburgh, March 19.—Present indications are that the season for cotton ties will be open in May or June. It is not known what the price will be and this matter cannot be determined until after the government has fixed prices on iron and steel products on April 1. Under existing conditions it is not unlikely that the price would be in the neighborhood of 1.85c a bundle, Pittsburgh.

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# Cast Shells

**May be Made by Pipe Foundries—More Government Tonnage**

Chicago, March 19.—Dearth of inquiry for cast iron pipe on the part of cities continues to be the outstanding feature. Uncertainty as to how much pipe can be bought for the sum appropriated is reflected in the method of asking bids in the few cases where figures are asked. Fort Wayne, Ind., opened bids March 18 on its season's requirements of 200 to 300 tons. Battle Creek, Mich., will take figures March 26 on 100 to 300 tons. A movement is on foot which may result in cast pipe shops taking on considerable tonnages of cast iron shells, which are in demand by the munitions board and which can be turned out readily in these foundries.

### Contracts More Numerous

New York, March 19.—Stocks of cast iron pipe, particularly on sizes ranging up to 12 inches, appear to be the lowest in several months. Shortage of labor in conjunction with the difficulty of the foundries in getting raw material has tended to cur-

tail plant operations. At the same time, governmental and private buying has made a steady drain on supplies. The Westinghouse Church Kerr Co. has awarded 2000 tons for the government's nitrate plant at Sheffield, Ala. Approximately 1200 tons of 6 and 8-inch were figured on for the government explosive plant at Nashville, Tenn. It is believed this material will be furnished by the B. F. Shaw Co., Wilmington, Del., whose plant has just been leased by the Du Pont interests. It is understood the larger sizes for the Nashville plant will be of wood. The Thompson-Starrett Co. has purchased about 5500 tons of 4 to 36's for the Charleston, W. Va., power plant. The Hercules Powder Co. recently placed 1800 tons of 6 and 8-inch pipe with the Central Foundry Co. for its California plant. The John Fox Co. has 350 tons for the naval station at Pelham Bay. This company recently took a contract for 11,775 feet of 4 to 8 inches, for Lodi, N. Y. The government is buying pipe for extensions to cantonments and it is said will be in the market shortly for the requirements of at least two new cantonments. Municipal inquiry continues dull. Amsterdam, N. Y., is understood to be planning to install 8600 feet of 14-inch pipe, and Herkimer, N. Y., 4000 feet of 14-inch and 15,000 feet of 12-inch, but early action appears unlikely. Export inquiries continue to appear. At present there are several sizable tonnages out for the Orient, particularly, Japan and for South America.

### Activity in Butt Weld

Pittsburgh, March 19.—A somewhat better demand exists for butt weld iron and steel pipe. The mills are able to give prompt shipment on most of this business, the longest period being 30 days. Lap weld pipe is extremely active. Shipments on this grade are deferred owing to heavy commitments and some makers are entirely out of the market. Others are supplying their regular trade only but in some cases are not able to take care of full requirements coming from this source. Operations of producers have improved considerably, although they are not yet entirely satisfactory and some report that their output has been restricted because of their inability to make shipments to certain points in the east which have been embargoed. The National Tube Co. has issued a new card as of March 15 on California oil country goods, providing slightly increased prices owing to higher freight rates to the Pacific coast effective on that date.

# Asks Competition on Nails

**War Department Seeking 30,000 Kegs States Present $3.50 Price is Only Recommended and Not Officially Fixed**

Pittsburgh, March 19.—Unusual interest is being manifested in specifications sent out by the bureau of engineering, war department, which calls for competitive bids to be opened March 22 on 30,000 kegs of nails for shipment to France. Specifications call for seven sizes including 2, 4, 6, 8, 16, 40 and 60-penny nails and carry a notation pointing out that the President has not approved a price for nails and that therefore the bids will be made on a competitive basis. While the so-called fixed price of nails is $3.50 per 100 pounds, Pittsburgh, to jobbers, it represents only the level recommended by the committee on steel and steel products of the American Iron and Steel institute. This level has been adhered to closely by the trade according to reports. In view of the war department's specifications calling for competitive bids, much interest is being shown as to what levels may be named by makers. The price of $3.50 is held by manufacturers to provide such a small profit that the business is not attractive and it is reported that a higher level may be sought in the war department bids. The bureau of supplies and accounts, navy department, will open bids on March 26 for 40,000 kegs of nails, as heretofore noted. These specifications do not carry the item incorporated by the war department regarding competitive bids. Good sized orders are being taken by makers of nails, most mills confining their sales to car lots of 25 tons or more in order to save transportation space. Manufacturing interests are making active demand for wire and the time of deliveries range from 30 to 60 days. Jobbers appear to be showing less interest in the market. Good demand is also being made for barbed wire, a considerable portion of it coming from agricultural interests of the northwest. Difficulty is being experienced by wire manufacturers in making shipments on account of embargoes. Some mills whose operations continue to be greatly restricted are complaining that the car supply does not exceed 10 per cent of their normal production. Thousands of tons of wire products are piled at mills awaiting shipment and makers are already beginning to have orders cancelled by customers who can no longer wait for deliveries and do not need tonnages since seasons for selling by them have come to an end. More cancellations are in prospect unless immediate relief from car shortage is forthcoming. Makers facing this situation are declining business.

### Huge Quantities Distributed

New York, March 19.—Further orders for wire nails and wire rope have been distributed by the government. It is estimated that since this country went to war the government has closed for 500,000 to 600,000 kegs of nails and from 20,000 to 25,000 tons of wire rope.

## Easier Conditions

**Shown in Tin Plate Operations and Shipments, But Stocks Grow**

Pittsburgh, March 19.—Operations of tin plate mills over the country show an increase of about 8 per cent as compared with the preceding week, and this probably means almost 90 per cent of capacity. The car supply has increased considerably, but it is not yet adequate to transport production on a 90 per cent basis, and therefore no inroads have been made by manufacturers on accumulating stocks in warehouses. On the contrary, it is obvious that stocks continue to accumulate although on a smaller scale than has been the case heretofore. The food administration at Washington has been making vigorous efforts to see that production of tin plate is maintained at as high a rate as possible, and that the car supply to transport the output to makers of tin containers is made adequate. Shipments of tin plate destined to the Pacific coast, which were held up at Chicago on account of traffic congestion, have been moved forward and have been followed by others which have been passing through that prominent gateway without any difficulty.

## New Furnace Completed

The new No. 8 blast furnace of the Lackawanna Steel Co., at Buffalo will be blown in within a few days. It has a rated capacity of 500 tons daily. The coke bins now are being completed and the finishing touches are being given to the plant. The company also has under construction its No. 9 furnace which is practically similar in size and capacity to the No. 8 stack.

# Structural Awards Steady

## Total February Contracts Only Slightly Greater Than Those of January—Financial Factor Checks Building Operations

Pittsburgh, March 19.—Shortage of cars is hampering operations of some structural mills in this district and holding up important government orders. Other fabricators report that while they are suffering somewhat from a lack of cars, the improvement in this direction has been sufficient to give them marked relief. Difficulty is being experienced, however, in getting some necessary steel tonnages. Mills are making efforts to accumulate stocks to take care of future contingencies but this has been found to be a slow process. The vast bulk of operations are devoted to government requirements. The domestic market is extremely dull, and, if possible, is narrower than it has been for a long time.

### February Shows Gains

New York, March 19.—Structural bookings during February gained slightly, according to the records of the Bridge Builders' and Structural society. Approximately 55½ per cent of shop capacity was contracted for compared with 53 per cent in January. The February bookings aggregated 99,900 tons, or an increase of 4500 tons. A comparative statement follows:

| Month | Per cent | Approx. tonnage |
|---|---|---|
| February, 1918 | 55½ | 99,900 |
| January | 53 | 95,400 |
| December, 1917 | 121 | 205,200 |
| November | 77 | 138,600 |
| October | 61½ | 110,700 |
| September | 29 | 52,200 |
| August | 38 | 68,400 |
| July | 41½ | 74,400 |
| June | 47½ | 85,500 |
| May | 56½ | 102,000 |
| April | 61 | 110,000 |
| March | 68 | 122,000 |
| February | 59 | 106,000 |
| January | 61½ | 119,000 |
| December, 1916 | 86 | 148,000 |
| November | 78 | 134,000 |
| October | 77 | 133,500 |
| September | 52½ | 99,400 |
| August | 64 | 112,600 |
| July | 47½ | 83,600 |
| June | 58 | 100,000 |
| May | 80 | 137,000 |

Buying of structural steel in this territory, while still dull, embraces a slightly better volume of small orders, ranging from 25 to 50 tons, for miscellaneous industrial work. Some scattered buying by railroads also has tended to augment the volume of business placed. It is believed that the steel requirements of the four steel loading plants to be erected for the government in the east will be comparatively light. It is estimated that the total will not be over 5000 to 6000 tons.

### General Building One-Fourth

Cleveland, O., March 19.—A survey of the local building situation shows that architects have on their books only 25 per cent of the normal volume of work at this season. Inability of prospective builders to obtain financial accommodations is the main factor blocking these enterprises. A considerable tonnage of reinforcing bars and some structural shape business is in sight at Cincinnati, where the purchase and clearing of land indicates that the long-proposed Dixie terminal may be constructed in the near future. The construction probably will be mainly of reinforced concrete, but the train sheds will require light structural shapes.

### Industry Only Buyer

Chicago, March 19.—Tonnages of structural material booked in the west recently are confined entirely to railroad and industrial needs, and are not of importance. The largest tonnage recently closed involves 550 tons for a boiler shop for the Moore & Scott Iron Works at Oakland, Cal., which will be furnished by the Pacific Rolling Mill Co. Fabricating shops continue to receive additional commissions from the Emergency Fleet corporation for ship parts and are busy preparing this material.

#### CONTRACTS AWARDED

Bridge repairs, New York central, 400 tons, to independents.

Addition to W. R. Grace building, New York city, 300 tons, to Bethlehem Steel Co.

Two bridges, 1400 tons, and crane runways, 500 tons, for Pennsylvania railroad to independents.

Boiler shop for Moore & Scott Iron Works, 550 tons at Oakland, Cal., to Pacific Rolling Mill Co.

Four 100-foot and one 90-foot through turntables for Chicago, Burlington & Quincy Railroad Co., 365 tons, to American Bridge Company.

Structural steel for filter and kiln houses for the Leon Godchaux Co., Ltd., Reserve, La., 189 tons, to Virginia Bridge & Iron Company.

Viaduct from Ferry to north side of Market street, San Francisco, Cal., 103 tons, to Ralston Iron Works.

Addition to the O'Neal Iron Works, Buffalo, 182 tons to the Lackawanna Bridge Co.

#### CONTRACTS PENDING

Forge building and machine shop for Delaney Forge Co., Buffalo, 620 tons, bids being taken.

# Car Program is Reduced

## Government Decides Not to Award Great Block at One Time—45,000 Now Planned—Specifications Virtually Complete

New York, March 19.—Buying of rolling stock is exceedingly quiet. There is not even the scattered inquiry from industrial companies which has characterized the market during the past few weeks. With the exception of a few minor details the standardization of cars has been practically settled upon and it is believed that as soon as the President fixes his signature to the railroad bill, orders for cars in large numbers will be forthcoming. It is thought in some quarters that an allotment will be made before the end of this week, although the question of prices will not be settled upon at that time.

According to present indications, bids will be received on about 2700 locomotives and 45,000 freight cars. The cars for the most part will probably be of the larger type, ranging from 50 to 70 tons in capacity. The first allotment of locomotives, it is believed, will involve 900 and the second about 1000, which will leave about 800 locomotives to be acted upon at a still later date. The American and Baldwin companies probably will be asked to build 1500 locomotives between them.

### Small Spikes in Demand

Pittsburgh, March 19.—The market for small spikes, which has been brisk for some time, is showing increased activity. Jobbers are putting out additional inquiries and one of them calls for 2400 kegs. There is a shortage of small spikes and some producers are entirely out of the market while others are taking comparatively small lots for their regular customers and are making shipments in from one to two months.

### Light Rails Active

Chicago, March 19.—Bookings of light steel rails by the western mill are about equal to output but orders are being taken only for tonnages to be delivered at points free from embargo. Considerable tonnage on the books for export and for ship-

ment to points where railroads will not accept freight are being held back. No further orders of this sort are being accepted. Mills are far

### Standard Spikes Taken

Cleveland, O., March 19.—That the makers have been entering some large orders for standard spikes is indicated by the lengthening of deliveries following a period of rather slack demand. Shipment promises now extend to 6 and 8 weeks with leading makers. The Nickel Plate is inquiring for 300 kegs and the Columbus & Southwestern for 200 kegs.

## Shortage Feared

### In Ferrosilicon of Various Grades—Ferro and Spiegel Strong

Pittsburgh, March 19.—Consumers of 50 per cent ferrosilicon have begun to place their requirements for last half delivery and apprehension is being felt that there will be a shortage of this alloy. Sales for shipment after July are being made at $150, furnace, while tonnages taken for delivery in July have been sold at $165, delivered. The prompt market is quotable at $150, delivered, in carload lots, while sales no less than carload lots have been made at $200, delivered. Heavy demand is being made for the lower grades of ferrosilicon and there appears to be an acute shortage of these alloys. No offerings are being made in the open market. The market for 80 per cent ferromanganese is firm at $250, delivered, for both prompt and contract tonnages.

### Manganese Alloys Strong

New York, March 19.—Much strength continues to be shown by both ferromanganese and spiegeleisen. The latter metal now is held at $70, furnace, for 20 per cent and at $67.50 for 16 to 18 per cent on any position this side of fourth quarter. Recent purchases of 5000 to 6000 tons of ferromanganese by the Jones & Laughlin Steel Co. appear to have cleaned up the market pretty well. Bids of $250, delivered, now are not bringing out any metal. A representative of an English maker during the past two weeks disposed of several hundred tons for the second and third quarters at a figure under the domestic price.

Prices on 50 per cent ferrosilicon range from $180 to $190, delivered, on spot and from $150 to $155 on contract. A new producer at Niagara Falls making from 6 to 7 tons daily is offering spot metal. Ferrochrome and ferrotungsten are unchanged.

# Steel Shortage Unrelieved

### Consumers Find Billets, Sheet Bars and Slabs Very Scarce—Government Assures Mills of Sheet Bars

Pittsburgh, March 19.—Consumers of sheet bars, including manufacturers of sheets and tin plate, are making vigorous but unsuccessful efforts to cover their steel requirements. There is an extreme shortage of this class of steel and mills which are now fully committed are unwilling to make offerings for delivery beyond the period covered by existing contracts. The market for 4 x 4 and other sizes of billets, either open-hearth or bessemer, is extremely quiet so far as actual sales are concerned but there is much inquiry. There is also a shortage of this form of steel. Jobbing mills actively are seeking tonnages of light slabs and platemakers are also inquiring for slabs but are unable to cover their needs. Production of billets and sheet bars has increased, however, and it is believed that before long manufacturers will be in a position to make some offerings.

### Expect Buying Movement

Pittsburgh, March 19.—Makers of cold rolled strip steel believe that domestic buyers will come actively into the market soon. Stocks of consumers are reported to be almost exhausted and this leads to the belief that they are about to make purchases. The government is the principal buyer at present and is taking fair sized requirements.

### Sheet Bars Limited

Youngstown, O., March 20.—Valley sheetmakers who are working on government orders are practically assured of an adequate supply of sheet bars. One valley producer who depends on outside mills for his sheet bars was notified by government officials that three cars of this material were being shipped to him from a mill in Johnstown, Pa. Sheet bars are being rolled by the mills in this territory only in limited tonnages. The finishing mills are working bessemer steel almost entirely, and so great is their demand that little material remains for rolling sheet bars.

## Deliveries Fall Back

Boston, March 16.—There has been no special change in the jobbing steel and iron trade, save that deliveries, which were running fairly good recently, have fallen back again during the past week, reflecting the embargo on the New Haven and the congestion which has developed on connecting roads in Pennsylvania. A steady demand is still noted for products needs in war work, but continued dullness marks the trading in building warehouses.

## Plates Sought

### By English Buyers for Ship Work—Lake Tonnage Allotted

Cleveland, O., March 19.—English buyers are inquiring for considerable tonnages of plain ship plates in this district. Among some local mills upwards of 90 per cent of production now is going to war work. A new order of more than 2000 tons for the restoration and reinforcement of lake ships which are to be cut in two to go through the Welland canal has been allocated by the Fleet corporation. Cleveland and Buffalo mills are reported as receiving the business. Mill production in plates is considerably better and offerings of universals especially by eastern mills are being taken without priority orders. Eastern makers continue to quote 3.33c for western deliveries.

### Car Orders Delayed

Pittsburgh, March 19.—Distribution of government orders is being delayed somewhat by changes being worked out in designs for standardized equipment. It is expected that these details will be completed soon and contracts allocated among builders. The government also has changed its original plan of an initial allotment of between 125,000 and 150,000 cars. Instead, the number will be much less. Decision to reduce the size of the first order is said to be due to the belief that if the distribution was made at one time the railroads would become congested in their efforts to carry the large tonnage of materials and supplies necessary for the production of the cars. Inquiries from domestic consumers for plates are not numerous, consumers apparently appreciating it would be impossible to cover requirements. Makers of plates are hoping that the government will increase the 3.25c, Pittsburgh, price. Those who have to buy pig iron or slabs are especially anxious that this be done.

# Washington Price Action Uncertain

## Conference of Representative Iron and Steel Manufacturers and Price Fixing Committee of War Industries Board Considers Production and Distribution Factors as Well as Costs—Urge Lengthening of Price Term

WASHINGTON, March 20.—As the representatives of iron and steel manufacturers went into conference today with the new price-fixing committee of the war industries board, there is general uncertainty as to what the government may do with respect to the revision or reaffirmation of iron and steel prices effective April 1. Problems of production and distribution are being given full consideration as well as costs at the conference as the President suggested would be done in making his official announcement yesterday of the personnel of the price-fixing committee. This may lead to some modifications of the present conditions of price regulation if not of the prices themselves. In this connection much emphasis has been laid upon the advisability of extending the term over which prices are effective, beyond the three months period now in effect, in order to stabilize trade conditions.

### New Price Board Acts

Iron and steel prices will be the first to be passed upon by the new price-fixing committee operating under the revamped machinery of the war industries board, which was suggested by President Wilson recently when he named Bernard M. Baruch as chairman of that body. With the exception of one civilian member who will be named later, the price-fixing committee now is complete. This committee, as announced by the council of national defense, approved by the President is composed of:

Robert S. Brookings, of the war industries board, chairman.

Brigadier General Palmer E. Pierce, surveyor general of supplies for the war department.

Paymaster John Hancock, of the navy bureau of supplies and accounts.

Dr. H. A. Garfield, fuel administrator.

F. W. Taussig, chairman of the United States tariff commission.

W. J. Harris, chairman of the federal trade commission.

Hugh Frayne, war industries board, representing labor.

Bernard Baruch, chairman of the war industries board.

Partial make-up of this board and an outline of its functions were given in THE IRON TRADE REVIEW of March 14, in connection with the appointment of Mr. Baruch as chairman of the war industries board. As then announced, it will pass upon prices for all basic raw materials purchased by the government and establish a price-fixing policy from time to time to be approved by the President, after costs have been determined by the federal trade commission.

### Costs Will Be Considered

In the words of the President in making the appointment:

"The object of the price-fixing committee is twofold. First, it will be a separate body, quasi judicial in nature, for the purpose implied in its name, and it will serve this purpose through being made up of men separated so completely from industrial interests that their motives and actions in the determination of prices can be subject to no suspicion of mercenary interest. Prices will not be made until after costs have been passed upon by the federal trade commission. With costs as a basis the price-fixing committee will then consider problems of production and distribution before arriving at its decisions.

"The second object to be achieved by the price-fixing committee is speed. The committee will sit all the time and will thus eliminate unnecessary delay caused by the consideration of price-fixing problems in different quarters."

Modification of some of the present differentials to eliminate some of the inequalities which are said to have been brought forth by the several months' application of the existing schedule is to be sought by pig iron makers. These matters were considered at a meeting of leading producers or their representatives at New York, March 15. Most of these proposals concern the more or less special grades.

In low phosphorus iron, it has been suggested that a new classification intermediate between copper-free and copper-bearing metal be established. The present schedule lists copper-free iron at $53, furnace, and copper-bearing iron at $50, furnace. It is pointed out that those irons which contain only a moderate amount of copper are given no added value over those which have the maximum amount of this element although exhaustion of superior ores is involved in producing the former grade. It has been suggested that a dividing line be drawn on copper content and that the irons with the lower units be allowed some increase over the present general listing of copper-bearing iron, the same as now is allowed to higher silicon or lower phosphorus as compared to the base analysis.

Makers of silveries are contending that the present differentials under the 10 per cent base are too large and have asked that they be narrowed. The base price, under this proposal would remain unchanged. Southern producers of charcoal iron are advocating that they be allowed an increased differential on the higher silicon metal. It is set forth that some southern capacity has been forced out of blast by inability to operate at the prevailing schedule and some advances are asked.

### Jobbers Want Preference

In connection with the approaching review of market and distribution conditions in iron and steel, the jobbers of iron and steel and heavy hardware are calling for some preference in the replacements of stocks. A questionnaire conducted by the American Iron, Steel and Heavy Hardware association shows that its members are filling essential war requirements to the extent of from 60 to 90 per cent of their total business. According to the report of the committee on war service prepared by S. L. Orr of the Orr Iron Co., Evansville, Ind., as chairman, 80 per cent of the active membership purchase 565,500 tons of iron and steel annually.

"A manufacturer supplying 60 to 90 per cent of his output for purposes strictly essential would have no difficulty in securing priority, which at present is not applicable to jobbers' stock shipments, says the committee's report. Warehouse stocks are becoming more and more important to maintain continuous manufacturing operations, so that in view of the increased dependence on us for our most necessary service we feel that we should have recognition and some preference in replacement of stock."

## Wants State to Finance Canal Operations

Henry M. Sage, chairman of the finance committee of the New York state senate, has introduced a bill to enable the state canal board to construct, equip and if necessary operate canal boats and other craft as a war emergency measure. An appropriation is provided to enable the state to acquire a controlling interest in corporations to be organized by the state for the purpose, the capital stock of which is limited in the aggregate to $2,000,000. Senator Sage said this is being taken only as a part of the state's contribution to the prosecution of the war. He said: "Unless some such plan as this shall be adopted, the canals representing an investment of approximately $150,000,000, ready for operation from Lake Erie to the Hudson about the middle of May, will remain idle during this critical year of the war and the coal and food situation next winter will be indefinitely more dangerous than it has been this winter. Under the bill the state would continue to own craft no longer than one year after the war, then the craft would be leased to individuals of corporations for operation, the lessees to pay the state a fair value."

## Barge Canal to Open

According to the report of State Engineer Frank M. Williams to the New York state legislature, the New York state barge canal is to be open from Lake Erie to the Hudson river by May 15. The construction of a dam across the Genesee river near Rochester and heavy excavation near this and a few other points comprise most of the work still to be done.

"The canal in 1918," says the report, "can carry 10,000,000 tons between the lake and tidewater and thus release thousands of freight cars for use in sections of the country where inland water transportation has not been developed." Mr. Williams points out the urgent need for government aid in the construction of barges.

## Near Normal Operations

Chicago, March 19.—Operating conditions among steel and iron mills in the Chicago district have improved sharply and are now almost on what might be called a normal basis. Some delay is still being met in obtaining sufficient cars and fuel conditions, while sufficient, continually run close to the danger line. The leading interest now has 25 of its 29 blast furnace stacks in blast and today every open-hearth furnace at its four plants is producing steel. This is an unusual condition and results from the fact that repairs could be made to these furnaces during the time when only part were in operation. Bar iron mills, which were shut off from fuel supply for a time, are again able to proceed and have sufficient coal to continue operation.

## Wire Company Increases

The capital stock of the American Steel & Wire Co., of Fairfield, Ala., has been increased from $100,000 to $2,000,000. Notice of the increase was filed in the probate office in Birmingham a few days ago. William P. Palmer, president, who signed the notice, stated the action was taken at a meeting of directors March 14, 1918.

## Colorado's Output Less

In its pamphlet report for the last six months of 1917, the Colorado Fuel & Iron Co. gives its output of iron ore as 407,714 tons. For the year ended June 30, 1917, it was 911,991 tons. While 449,197 tons of pig iron were produced in the fiscal year ended June 30, 196,902 tons was the output in the last half of the calendar year. Finished iron and steel tonnage totaled 232,888 in the six months period and 591,981 tons in the full year. Coal mined, coke manufactured and limestone quarried were 2,109,559, 409,483 and 219,653 tons respectively in the six months ended Dec. 31, 1917, as against 4,386,028, 897,523 and 486,605 respectively in the company's fiscal year. A summary of the financial side of the report previously was published.

## Charters Iron Merger

With a capital of $5,000,000, the corporation certificate of the Dayton Coal, Iron & Railroad Co., Wilmington, Del., has been filed with the secretary of state for Tennessee from Dayton, Tenn. H. S. Matthews, Rome, Ga., who purchased the assets of the Dayton company's stock at the bankruptcy sale in Chattanooga last August, heads the new company, which owns coal and ore lands in Rhea, Meigs and Bledsoe counties, Tenn., and in Walker county, Ga. It is expected to have 400 coke ovens in operation at Dayton in the near future and several new mines are to be opened since the work of renovating and re-equipping the property now is in progress.

## Form Sales Corporation for Metals Trade

The Champlain Metals Corp., 165 Broadway, New York, has been organized to deal in steel, ferroalloys and chemicals for both the export and domestic trade. It represents exclusively several large eastern steel mills and two large eastern chemical plants. The officers of this company follow: President, Clements Batcheller, formerly connected with the Carnegie Steel Co. and the Tennessee Coal, Iron & Railroad Co. as sales representative; vice president, Ellis O. Friedman, president of E. O. Friedman, Inc., Albany, N. Y., dealer in iron and steel; treasurer, Leonard Kennedy, vice president, Ludlum Steel Co. and formerly affiliated with William A. Reed & Co., bankers; secretary, Hiland G. Batcheller, vice president, Ludlum Steel Co. The sales department is in charge of Wilson W. Gephart, formerly with the operating department of the Illinois Steel Co., Gary, Ind., and R. G. Williams, formerly affiliated with the sales department of the Central Tube Co. In addition to the officers the board of directors consists of Parker Corning, vice president and treasurer, Ludlum Steel Co., and a director in several banks, and Edward Corning, president, Ludlum Steel Co., treasurer Albany Felt Co. and director of the Albany Savings bank.

## Complete Boiler Plant

The government's $1,000,000 plant at Field's Point, R. I., where the Bethlehem Shipbuilding Corp., Ltd., will make boilers for torpedo boat destroyers, is practically completed and will be in full operation inside of a month. Work on the plant was begun Oct. 16, 1917. The structure is of steel and glass, 1-story high, 550 feet long and 150 feet wide. It was built along machine shop construction lines, though more heavily than the ordinary building of this type. It is equipped with four power cranes and the latest machinery for boiler work. The first contract will call for 90 boilers for the destroyers under construction at the Fore River and Squantum, Mass., plants of the corporation.

Dr. H. A. Garfield has handed down a ruling allowing purchasing commissions of 15 cents per ton on bituminous coal, 20 cents per ton on anthracite coal east of Buffalo and 30 cents on anthracite west of Buffalo.

## Early Iron

**Wanted by Various Eastern Users—Little is Available**

New York, March 19.—Numerous sizable inquiries for foundry iron are current for shipment by July, but it is a question where the tonnage can be located to supply these. The United States Cast Iron Pipe & Foundry Co. wants 5000 tons, the R. D. Wood & Co. 5000 tons, the Essex Foundry Co., Newark, 4000 tons, and there are many other smaller inquiries. Practically all of this tonnage is wanted for the first half. Only one maker is offering iron for delivery by July. This is a Pennsylvania stack which recently blew in and is making a limited tonnage of foundry iron preparatory to going on gray forge. An Alabama furnace seems to be the only furnace now taking second half tonnage in this district. Additional inquiries include several requests for low phosphorus, basic and malleable.

## Montana Ferro Plans Mean Saving of Ships

New York, March 19.—Plans of the Anaconda Copper Mining Co. to make ferromanganese electrically at Great Falls, Mont., as previously announced, it is expected will enable the government to withdraw 10 ships from the foreign manganese ore trade. These operations also will save cars for bringing Montana concentrates to eastern furnaces. It is expected that the plant will be operating by August and September and that it ultimately will have a capacity of 100,000 tons of standard metal per year.

## Operation Unchanged

Pittsburgh, March 20. (By wire.)—The Carnegie Steel Co. has not added any blast furnaces to its active list since last week and still is operating 46 ou of 59 stacks. It has held back about placing more in operation owing to inadequate supplies of coke. Supplies of fuel at furnaces have increased owing to improved shipping conditions, but supplies of cars in the region remain an irregular factor.

## Representation is Changed

The Debevoise-Anderson Co., New York, has withdrawn as a seller of the by-product foundry coke produced by the New England Coal & Coke Co., Everett, Mass. The Debevoise-Anderson Co. is the exclusive sales agent of the Seaboard By-Product Coke Co., with a new plant near Jersey City, N. J. Rogers, Brown & Co. hereafter will share in the sale of the by-product foundry coke made at Everett. The Wm. J. Breen Co., E. Arthur Tutein, Reed, Fears & Miller and Ally & Page will continue to sell this coke as heretofore.

## Convention Called

The spring convention of the National Machine Tool Builders' association will be held May 16 and 17 at the Marlborough-Blenheim hotel, Atlantic City.

## Lays Off Men

With 24 out of its 33 mills shut down because of a freight car shortage, the Trumbull Steel Co., Warren, O., has been compelled to temporarily dispense with the services of thousands of men. The same situation prevails in Niles and in other sections of the Mahoning valley.

## Sellers May Organize

Philadelphia, March 18.—A meeting of pig iron distributors was held here today to discuss matters of common interest. A committee is to be appointed which will consider the organization of a pig iron distributors' association. The meeting was called by J. G. Miller, Dubois, Pa., president of Reed, Fears & Miller, Inc., sellers of pig iron, coke, etc.

The interstate commerce commission has issued instructions requiring uniform and indestructible marking of freight.

# The Non-Ferrous Metals

**Copper Lead Spelter Tin**

New York, March 19.—The official aluminum price differentials fixed by the war industries board in respect to the new base of 32c for 98 to 99 per cent ingot, are as follows:

| 98 Per Cent Minimum Content | |
|---|---|
| Ingot, 50-ton lots | 32.00 |
| Ingot, 15-ton lots | 32.10 |
| Ingot, 1-ton lots | 32.20 |
| Granulated, 50-ton lots | 32.20 |
| Granulated, 15-ton lots | 32.30 |
| Granulated, 1-ton lots | 32.40 |
| **94 to 98 Per Cent Minimum Content** | |
| Ingot, 50-ton lots | 31.20 |
| Ingot, 15-ton lots | 31.30 |
| Ingot, 1-ton lots | 31.40 |
| Granulated, 50-ton lots | 31.40 |
| Granulated, 15-ton lots | 31.50 |
| Granulated, 1-ton lots | 31.60 |
| **99 Per Cent Minimum Content** | |
| Ingot, 50-ton lots | 32.20 |
| Ingot, 15-ton lots | 32.30 |
| Ingot, 1-ton lots | 32.40 |
| Granulated, 50-ton lots | 32.40 |
| Granulated, 15-ton lots | 32.50 |
| Granulated, 1-ton lots | 32.60 |
| **Alloy** | |
| No. 12 alloy, 50-ton lots | 32.20 |
| No. 12 alloy, 15-ton lots | 32.30 |
| No. 12 alloy, 1-ton lots | 32.40 |

The foregoing prices are fixed f. o. b. producing plants. The usual differentials in the trade are fixed for the various products, such as sheets, wire, tubing, etc. In the case of sheets, the new price will be 40c, f. o. b. mill, as against 46c, previously quoted by the Aluminum Co. of America and 55c to 60c quoted in the outside market. A few scattered sales of small lots of virgin ingot continue reported in the outside market at around 40c, while sheets have been sold at 55c. Such sales are not in accordance with the regulations of the war industries board, however.

The tin market continues as perplexing as ever. No spot Straits tin is offering in this country. Almost the same statement is true of Banca, although an occasional small lot appears and is offered at prices ranging all the way from 87c to 97c. Spot 99 per cent tin, such as Chinese No. 1, A. S. & R., Lamb & Flagg and other brands, are offered at 85c to 86c, New York. No quotations on Straits at Singapore are available. Chinese for March shipment from China is bid 76.50c; Banca for March shipment from Batavia is quoted at 78.50c. The tin situation steadily is growing more serious.

The lead market is soft. The American Smelting & Refining Co. continues to quote 7.25c, New York, and 7.17½c, St. Louis, for prompt March shipment, but quotations as low as 7.20c, New York and 7.10c, St. Louis, are heard in the outside market. Traffic congestion continues to hold up shipments from the west, with the result that metal delivered in the east commands a premium of ½c or more. Some spot lead has sold as high as 7.87½c, New York, recently.

Spelter is dull and weak. Prime western is quoted around 7.40c to 7.50c, St. Louis, for prompt, March and April shipment. The government is taking all available high grade spelter at 12c, St. Louis.

The copper market is devoid of developments. Casting makers are, pretty well sold up into May, but spot electrolytic is to be had in less than carload lots, while plenty of May electrolytic is offering.

A sale of 50 tons of spot antimony at 12.50c, duty paid, was made last week. This is the lowest price reported in this market since the outbreak of the war, but it is a little firmer today.

# Structures in Steel Fusion Welds

## Steel Welds Made by Oxyacetylene and Electric-arc Processes Present Unusual Structures—Differences Between the Two Flames Cause Characteristic Variations in Nature of Welds

THE oxyacetylene process is based on the great and local heat generated by the burning of acetylene in the presence of commercially pure oxygen, the two gases being thoroughly mixed before combustion. It is claimed that the theoretical temperature is somewhat under 4000 degrees Cent., but on account of various losses, the actual maximum temperature is probably about 3000 degrees Cent.

The electric-arc process, using a metal electrode, which is also the filling rod, generates a still higher and more local temperature. The actual temperature of the positive crater of the carbon arc is given as 3500 degrees Cent. No figures have been found for the temperature of the arc using a metal electrode, but it would probably not be different from that of the carbon arc, and probably higher than that of the oxyacetylene flame. The greater localization of the electric arc is due to the fact that it is not surrounded by a large envelope flame, as well as to its higher temperature; while the oxyacetylene white cone, or welding flame, in which the carbon of the acetylene is burned to CO, is surrounded and preceded by a long envelope flame, itself of high temperature, in which the CO is burned to $CO_2$, and the hydrogen of the acetylene to $H_2O$. This flame spreads around and over the pieces being welded, heating them to a further distance from the weld than does the electric arc.

These differences between the flames would naturally make some differences in the welds made by them. The greatest of these differences, the writer believes, is due to the more rapid heating and cooling of the electric weld, which causes much less coarsening of the grain of both the weld and the original material, and causes the coarsening to extend a smaller distance from the weld than does the oxyacetylene process; so that the method of making a weld is readily determined, provided it be unannealed. The difference in grain size is seen in Figs. 1 and 2.

In low-carbon steel wire (carbon 0.10 per cent or less) and in wrought iron, the cementite exists as small isolated particles at the grain boundaries. Many times the particles are entirely dark, when etched in sodium picrate, but at other times they seem to have what might be called a type of pearlitic structure. The relief effect is obtained by throwing the light a trifle to one

The author, S. W. Miller, proprietor, Rochester Welding Works, Rochester, N. Y., presented this paper at the annual meeting of the American Institute of Mining Engineers, New York, Feb. 20.

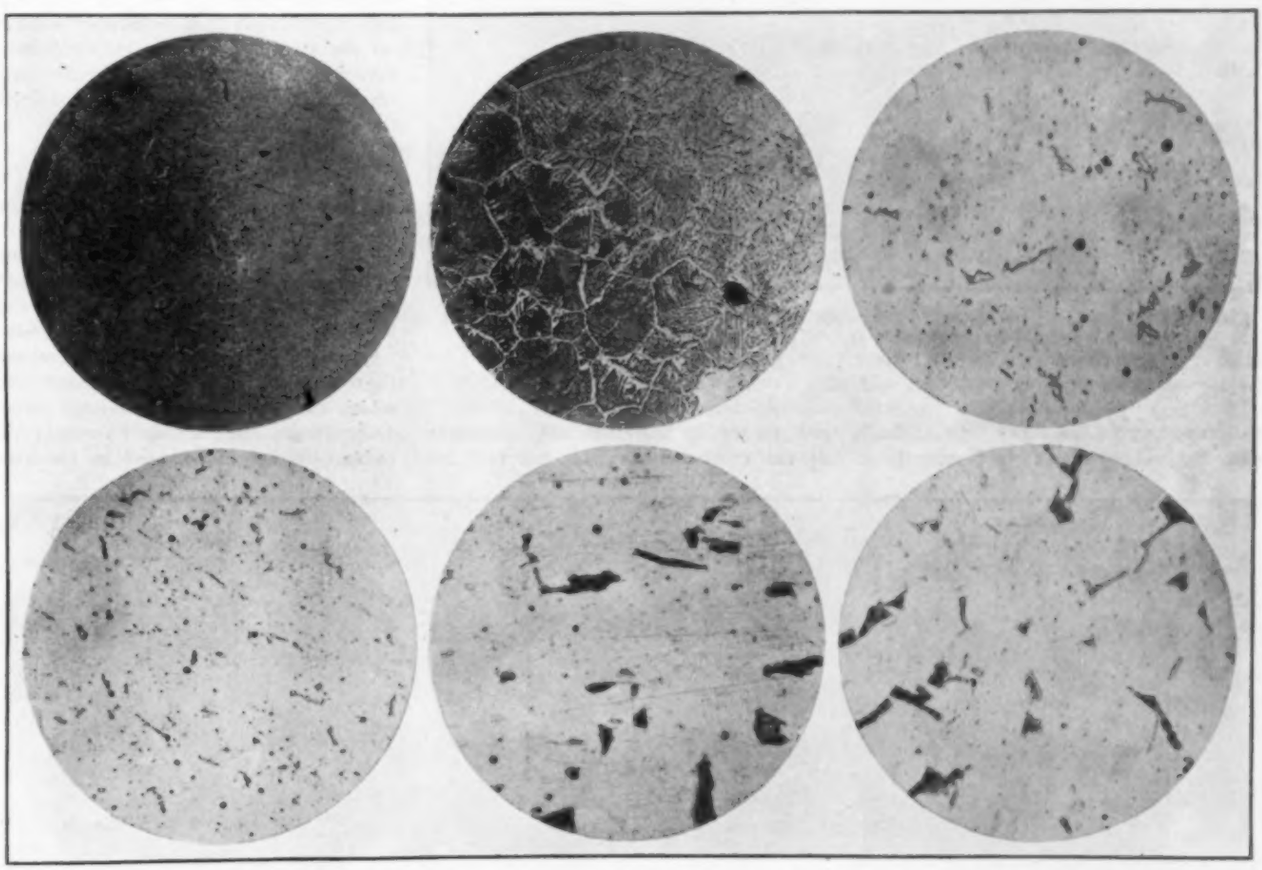

FIG. 1—ELECTRIC WELD, SHOWING COARSENING OF GRAIN IN ORIGINAL MATERIAL. ON LINE OF WELD. X 37. FIG. 2—OXYACETYLENE WELD, SHOWING THE SAME AS FIG. 1. FIG. 3—SPECIMEN RI2. SPOTS OF CEMENTITE AND OXIDE DOTS. IN WELD. X 317. FIG. 4—SPECIMEN RS2. SPOTS OF CEMENTITE AND DOTS OF OXIDE. IN WELD. X 317. FIG. 5—SPECIMEN RV2. PEARLITE, CEMENTITE SPOTS AND OXIDE DOTS. IN WELD. X 317. FIG. 6—SPECIMEN 23. PEARLITE, CEMENTITE SPOTS AND OXIDE. IN WELD. ALL SPECIMENS WERE ETCHED WITH PICRIC ACID

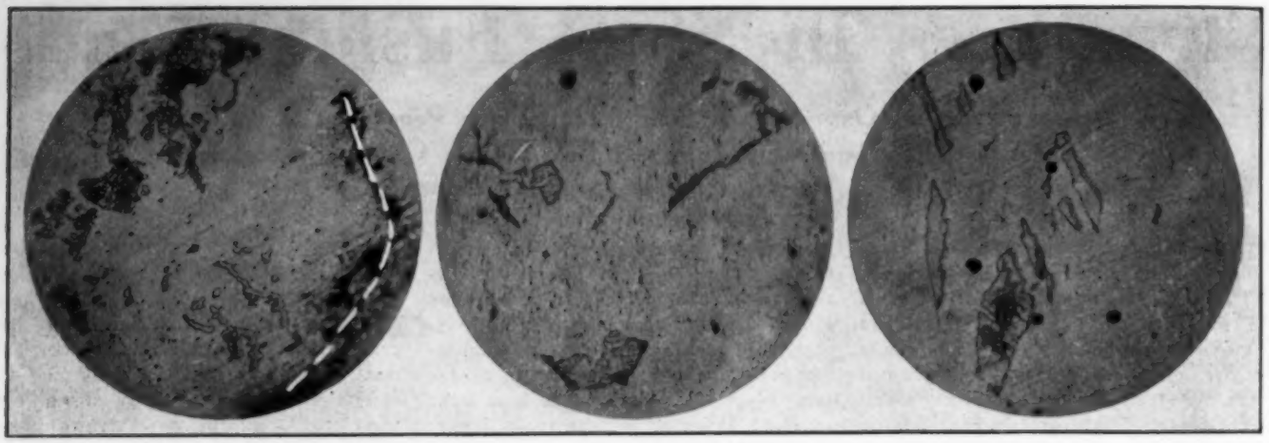

FIG. 7—SPECIMEN LG. CEMENTITE SPOTS AND PEARLITE. IN ORIGINAL JUST NEXT TO WELD. WHITE DOTTED LINE IS LINE OF WELD. ETCHED PICRIC ACID. X 317. FIG. 8—CEMENTITE SPOTS. IN WELD JUST NEXT TO ORIGINAL. ETCHED SODIUM PICRATE. X 317. FIG. 9—SPECIMEN Q14. CEMENTITE SPOTS PARTLY DARKENED. ETCHED SODIUM PICRATE. PART OF ILLUSTRATION 25. X 887

side in a horizontal plane, and is seen more readily than it can be photographed. Even the dark particles do not seem to be uniformly so at high powers. Also, there is frequently a variety of colors visible, ranging from dark red and brown to black, the usual color being brown. These colors are not visible at less than 400 diameters, as far as the writer has observed, less magnification showing simply darkening of the cementite. The cause of these colors is not clear.

FIG. 10—SPECIMEN Q14. SAME FIELD AS FIG. 9, BUT REGROUND. ETCHED PICRIC ACID. PART OF FIG. 27. X 887. FIG. 11—SPECIMEN Q14. ANOTHER CEMENTITE SPOT. ETCHED SODIUM PICRATE. X 887

The general subject of cementite in low-carbon steel is mentioned because it is important in welding; low-carbon material (not over 0.10 per cent for oxyacetylene, and 0.18 per cent for electric) being usually added. The location and structure of the cementite has, it is believed, an important bearing on the strength of the weld, and it is, therefore, advisable to determine the conditions under which it exists, so that they may be bettered, if necessary, by heat treatment.

With both kinds of welding, there is an agitation of the melted metal. This is violent with the electric method, resulting in there being more or less oxidizing of the iron. In electric welding, there is also the condition that some of the metal passes from the electrode as a spray, materially increasing the oxidation. There is no fusion weld which the writer has examined, that is free from considerable amounts of oxide, which can be seen in its usual

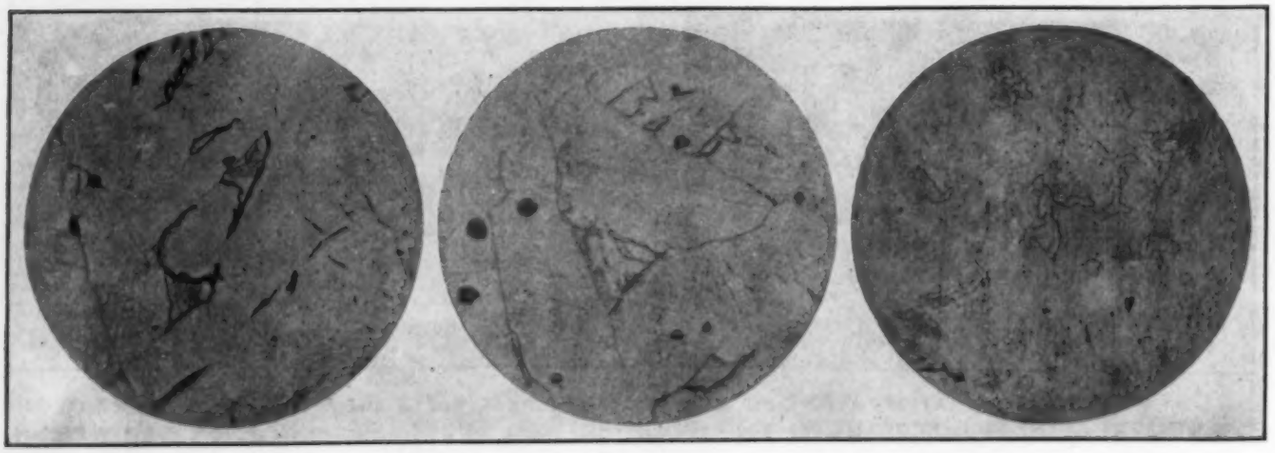

FIG. 12—SAME AS FIG. 11, BUT REGROUND. ETCHED PICRIC ACID. X 887. FIG. 13—SPECIMEN Q14. LOCATION OF LARGER SPOTS OF CEMENTITE. ETCHED PICRIC ACID. X 887. FIG. 14—SPECIMEN LG. ALONG LINE OF WELD. LINE OF CEMENTITE AND PEARLITE SPOTS. ETCHED PICRIC ACID. X 317

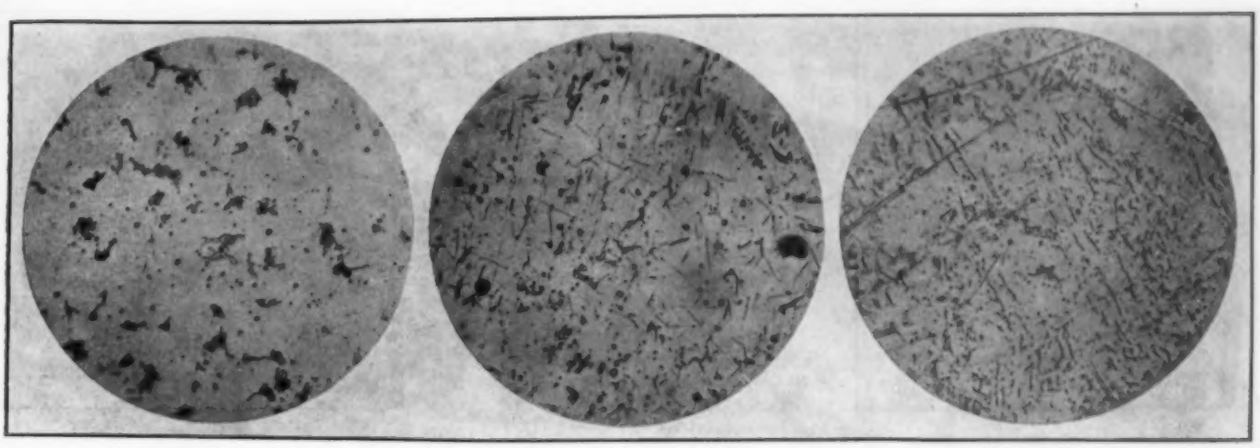

FIG. 15—SPECIMEN Q3. IN WELD JUST NEXT TO ORIGINAL. CEMENTITE AND PEARLITE SPOTS. X 317. FIG. 16—SPECIMEN Q3. IN BODY OF WELD. CEMENTITE AND PEARLITE SPOTS, OXIDE, AND LINES. X 317. FIG. 17—SPECIMEN Q15. GENERAL STRUCTURE OF WELD. X 317

form in many of the photographs; for example, Figs. 3, 4, 16, 18, 22, 25, and 30. It seems probable also that the weld contains large amounts of gases, such as nitrogen, and probably hydrogen in the oxyacetylene process. It would appear that improvements could be made by adding vanadium, manganese, or titanium, or combinations of these, elements, to the welding rod. High manganese rod (about 0.60 per cent), and vanadium rod (about 0.15 per cent) do make cleaner oxyacetylene welds, but the difficulty of welding is increased by the slag formed, especially with manganese. It is difficult to float this slag to the surface, and this must be done to make the weld free from inclusions and laps.

*Result of Agitation*

The agitation of the melted metal referred to, and the melting of the original material, which is usually higher in carbon than the welding rod, cause a mixture of the high and low-carbon materials, especially near the edge of the weld. There is also an amount of carbon burned out during the melting; so that there is a change in the carbon content of the metal from the original toward the center of the weld. In addition, there is a great variation in the heating and cooling rates, and in the chemical composition of the welding rods used in different shops, so that great differences in structures of the welds for this reason may be expected.

The foregoing agitations result in a variety of structures. Figs. 3 and 4 show the same apparent structure of the cementite as appears in low-carbon steel wire. This is also seen in Figs. 6, 7, 8, and 14, which are oxyacetylene welds; and in Figs. 15 and 16, which

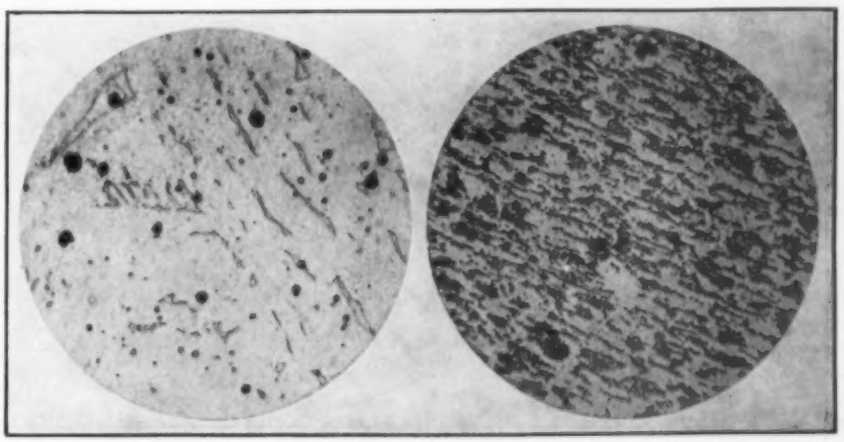

FIG. 18—SPECIMEN Q15. SAME AS FIG. 17, BUT X 887. FIG. 19—WIRE USED TO MAKE WELD N1, AS RECEIVED. ETCHED PICRIC ACID. X 148

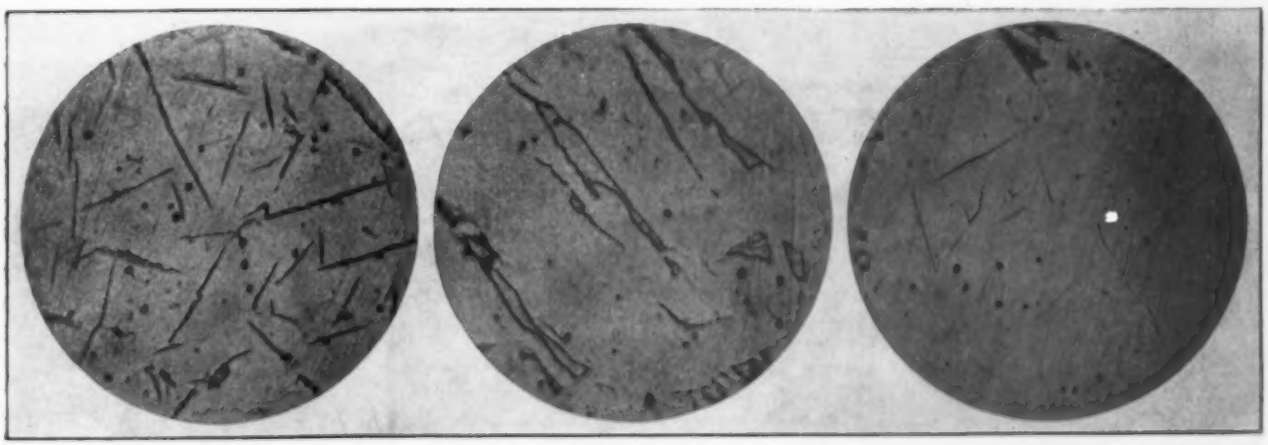

FIG. 20—SPECIMEN N1. CEMENTITE SPOTS AND LINES. ETCHED PICRIC ACID. X 1200. FIG. 21—SPECIMEN N1. CEMENTITE SPOTS. FIELD JUST SOUTHWEST OF FIG. 20. ETCHED PICRIC ACID. X 887. FIG. 22—SPECIMEN N1. X 887

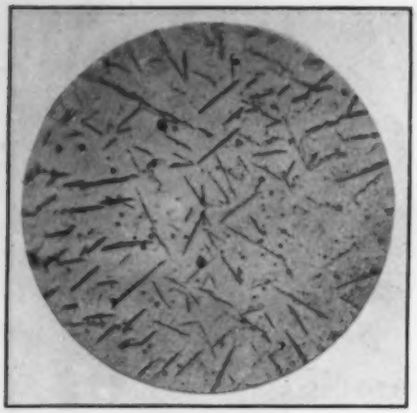

FIG. 23—SPECIMEN 116. ETCHED PICRIC ACID. SHOWS LINES IN ELECTRIC WELD. X887

are electric welds. The weld in Fig. 3 was made with wrought-iron wire, in 4 with low-carbon steel wire, and in 7, 8, and 14 with wrought-iron wire. There is a trace of this structure in Fig. 5, cent manganese. The weld in Figs. 15 and 16 was made with ordinary steel wire, the composition of which is not known.

*Appearance of Specimens*

All of these photographs, except 8, are taken from specimens etched with picric acid. Fig. 8 shows sodium picrate etching, and the structure is somewhat pearlitic in appearance, although, with picric acid etching, the appearance is the same as in Fig. 14. At higher magnifications, these spots appear as in Figs. 9 to 13, inclusive. There is little difference in the appearance of electric and oxyacetylene welds; in both cases, the particles are partly darkened only. They all, however, darken more or less, sometimes around the edges, sometimes in the center. With picric acid etching, they are brilliant.

The location of the spots is usually at the grain boundaries, as in ordinary steel; but many times they appear to

FIG. 24 — SPECIMEN MVS9, SHOWING LINES IN OXYACETYLENE WELD. X 317

tant, because they seem to be more or less carburized, and at times, even in oxyacetylene welds, lie in a line parallel with the line of the weld, and close to it; and also because it has been the

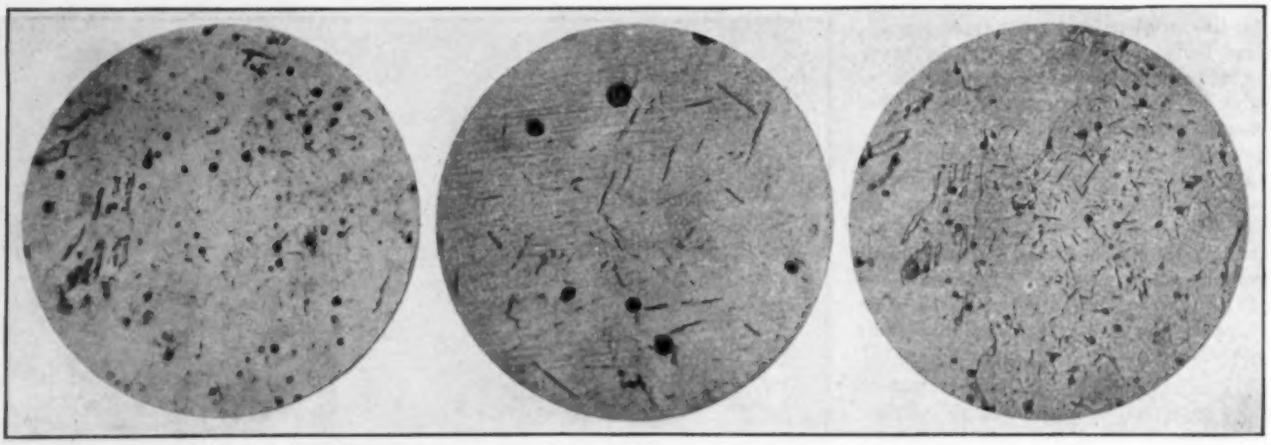

FIG. 25—SPECIMEN Q14. CEMENTITE SPOTS AND LINES DARKENED BY SODIUM PICRATE ETCHING. X 317. FIG. 26—SPECIMEN Q14. SAME AS FIG. 25, BUT X 887. FIG. 27— SPECIMEN Q14. SAME FIELD AS FIG. 25, AFTER REGRINDING AND ETCHING WITH PICRIC ACID

which was made with vanadium-steel wire of about 0.15 per cent carbon and 0.15 per cent vanadium. The weld in Fig. 6 was made with wire containing about 0.15 per cent carbon and 0.50 per

FIG. 28—SPECIMEN Q14. SAME AS FIG. 27, BUT X 887

penetrate the grains, usually parallel to each other, as in Fig. 13, as a general rule extending to the grain boundaries, but never passing from one grain to another. This parallelism, especially of the elongated particles, can be noticed in Figs. 17, 18 and 21. These are all electric welds, and these bright elongated particles appear much more frequently, from the writer's experience, in electric welds than they do in oxyacetylene welds. They are, however, present in some oxyacetylene welds, particularly those which are rapidly cooled, as shown in Figs. 9 and 10.

At high magnification, Fig. 18 shows in one spot a somewhat pearlitic structure, but the rest of the particles do not appear to show it. Whatever their nature, it would appear that the structure is not a satisfactory one in steel. The spots are evidently harder than the metal surrounding them; and the question of proper heat treatment for their elimination appears to be important, because they seem to be more or less carburized, and at times, even in oxyacetylene welds, lie in a line parallel with the line of the weld, and close to it; and also because it has been the writer's observation that many times they exist where there is a poor union between the original and added materials.

One of the most interesting structures

FIG. 29—SPECIMEN Q14. LINES ENDING AT GRAIN BOUNDARIES. X 887

FIG. 30 — SPECIMEN 167X. SHOWING LINES. ETCHED PICRIC ACID. X 317

found in welds made by both methods (but never in a properly made oxy-acetylene weld, as far as the writer has observed), and without exception in electric welds, is that shown in Figs. 16 and 22 to 33, inclusive. The first time it was seriously noticed by the writer was when he observed the field shown in Fig. 30. This specimen (see 167X in the table) is from an electric weld, probably made with ordinary steel wire, although this is not certain. What attracted his attention was the peculiar relative position of the lines in the center of the field. Their relation is better seen in Fig. 31, taken at higher power. It will be noticed that these lines are parallel to the sides and diagonals of a square, and to the lines drawn from the corners of a square to the middles of the opposite sides.

*Results With Carbon Steel*

The field shown in Fig. 24 was noticed in a weld made in 0.77 per cent carbon steel where the added material was wrought-iron wire. In this case, the location of the lines was confined to a narrow zone just next to the original material; while in electric welds made with wire containing considerable carbon, such as shown in Fig. 19, the weld is full of them, no special location being noticed. In welds made with low-carbon wire, they seem to select the places where the cooling is the most rapid. This is also true in oxyacetylene welds. In both the latter cases, they are uneven and erratic in their distribution. It does appear, however, that welds made with higher-carbon material contain more of the lines than those made with wire containing less carbon. Figs. 20 and 23 are illustrations of welds made with higher-carbon material than in specimen *Q*15, which was made with wire containing not over 0.10 per cent carbon. In specimen *Q*14, which was made by the oxyacetylene process, using a strongly excess-oxygen flame, the lines were found in only two places. These were at the edge of the piece, where it would cool rapidly. The center was entirely free from them. The material used to make this specimen was low-carbon steel wire.

*Difference of Opinion*

The author has found three references to these lines. In the first reference, they are believed to be oxide; in the second, they are called magnetic oxide; and in the third, they are stated to be cracks or fissures. He believes that none of these explanations is correct, and is strongly inclined to believe that they are very minute plates of cementite rejected along certain crystallographic planes. His reasons are as follows:

*First.*—They darken when boiled in



FIG. 31 — SPECIMEN 167X. SAME AS FIG. 30, BUT X 887

FIG. 32—SPECIMEN 167X. SAME AS FIG. 30, BUT FURTHER ETCHED WITH PICRIC ACID. FIG. 33—SAME AS FIG. 31, BUT MORE HEAVILY ETCHED. FIG. 34—SPECIMEN NW1. LINES IN CENTER GRAIN. ETCHED NITRIC ACID. X 317

FIG. 35 — SPECIMEN RV2. PEARLITE LINES IN GRAIN. ETCHED NITRIC ACID. X 317

FIG. 36 — SPECIMEN RV2. PEARLITE SPOTS. ENTIRE FIELD IS ONE GRAIN. ETCHED NITRIC ACID. X 317

## Specifications of Wire Used in the Tests

| Specimen | Made with | Original | Process | Remarks |
|---|---|---|---|---|
| *Q3* | Steel wire | Steel plate | Electric | Weld |
| *J14* | Wire *D* | ——— | Oxy-acetylene excess oxygen... | Button |
| *Q15* | Wire *D* | Steel plate | Electric | Weld |
| *116* | Steel wire | Steel plate | Electric | Weld |
| *N1* | Wire *C* | Bar machined steel.. | Electric | Weld |
| *LG* | Wrought iron wire.... | Steel plate | Oxy-acetylene .. | Weld |
| *RI2* | Wrought iron wire.... | Bar machined steel.. | Oxy-acetylene .. | Weld |
| *RS2* | Wire *D* | Bar machined steel.. | Oxy-acetylene .. | Weld |
| *RV2* | Wire *A* | Bar machined steel.. | Oxy-acetylene .. | Weld |
| 23 | Wire *B* | ——— | Oxy-acetylene .. | Button |
| M. V. Sp. 9.. | Wrought iron wire.... | *77C* steel | Oxy-acetylene .. | Weld |
| 167X | Steel wire | Van. steel plate..... | Electric | Weld |
| *VW1* | Wire *C* | *23C* | Oxy-acetylene .. | Button |

## Analysis of Wire in the Foregoing Specifications

| | Wire *A* | Wire *B* | Wire *C* | Wire *D* |
|---|---|---|---|---|
| Carbon | 0.160 | 0.13 to 0.18 | Shown in | not over 0.080 |
| Sulphur | 0.034 | Max. 0.045 | Fig. 29 | not over 0.025 |
| Phosphorus | 0.015 | Max. 0.050 | ..... | not over 0.020 |
| Manganese | 0.190 | 0.40 to 0.60 | ..... | not over 0.150 |
| Silicon | 0.110 | ..... | ..... | not over trace |
| Vanadium | 0.190 | ..... | ..... | ..... |

No further information as to composition of wire is at hand than given above. "Button" means that wire was melted down into a button weighing about 25 grams, and cooled in air.

sodium picrate. This is shown in Figs. 10, 22, 25 and 26.

*Second.*—They are more numerous with high-carbon wire than with low.

*Third.*—When heated above the critical range, say to 750 degrees Cent., for 5 minutes, and allowed to cool in the furnace from 750 degrees Cent. to 710 degrees Cent. at the rate of 7 degrees per minute; from 710 degrees Cent. to 695 degrees Cent. at the rate of 3 degrees per minute; and from 695 degrees Cent. to 635 degrees Cent. at the rate of 8 degrees per minute, the lines disappear.

Other tests showed that a considerably quicker cooling rate, an average between the above limits of 14 degrees per minute, was also sufficient.

It also appears that under certain conditions in welds, particles that are evidently pearlite may assume the same directions. Fig. 34, from a specimen made by melting the wire shown in Fig. 29, shows parallel plates of pearlite structure in the center grain, the grain boundaries being clearly defined. Fig. 35 shows two directions of pearlitic masses in the same grain. Fig. 36 shows pearlitic spots extending in two directions, although mostly in one. The grain, from which this photograph was taken, more than covers a 4 x 5 plate, and the directions were the same in the entire grain. One peculiarity of these lines in welds is that they widen considerably by prolonged etching. Figs. 32 and 33 show this when compared with Figs. 30 and 31. Under the microscope, they appear to resemble etching pits in that they are deeper in the center than at the sides, and this depth appears to increase as the etching is prolonged. They also have the appearance of being stepped when the light is thrown by the reflector in the right direction.

There is also, in many cases, a faint white line which can be seen in Fig. 33 in the center of two of the lines and in Fig. 23. It is possible that this is the edge of a plate of cementite, although it may be due to an optical effect.

The author has ventured to call attention to these peculiar structures for two reasons: *First.*—Because of their probable practical importance in connection with the strength of welds. *Second.*—Because of their probable theoretical importance in connection with the deformation of iron and steel.

# Chrome Ores in Southern Pennsylvania

THE war has increased so greatly the demand for chrome steel for use in making armor plate, projectiles, and high-speed tools that the domestic production was multiplied almost eightyfold between 1914 and 1916.

From the beginning of the chrome industry until the civil war the mines of chrome ore in Maryland and Pennsylvania were practically the only sources of supply for the entire world. Up to the latter part of the nineteenth century almost all these mines were owned or operated by the Tyson Mining Co., Baltimore. When the importation of Turkish ores lowered the prices of chrome ore in the United States market, home production was reduced, and the Pennsylvania deposits of the ore were consequently relegated to the position of a reserve supply.

Since the eastern mines were closed, in 1882, or thereabouts, the chrome ore produced in the United States has been mined almost entirely from deposits on the Pacific coast, and the output has been declining, while the imports from foreign sources, chiefly from South Africa and New Caledonia, have been steadily rising.

The imports in 1916 were almost double those in 1914. The reports of the United States geological survey show that the domestic production in 1916 was 47,035 tons and that the imports were 115,945 tons, so the total available supply in 1916 was 162,980 tons. In 1917 the domestic production was only about 40,000 tons and the imports, computed from reports for the first nine months of the year, fell to 103,000 tons. The total quantity of chrome ore available for consumption in 1917 was therefore only 143,000 tons as contrasted with 162,980 tons available in 1916.

In November, 1917, E. F. Bliss, of the United States geological survey, examined the chrome-bearing rocks of the state-line serpentine belt of southern Pennsylvania and discovered deposits of chromite occurring from Bald Friar, on the Susquehanna river, through the southern part of Lancaster and Chester counties, Pa., and the northern part of Cecil county, Md. The ore occurs both as massive, compact chromite in nodules and pockets of variable size in a serpentine gangue, and as a spotted ore in which grains of chromite are rather evenly distributed through the serpentine. The pockets that contain the massive ore are so irregularly distributed that prospecting is largely a matter of chance, but in view of the theory recently advanced that chromite is formed through segregation, by gravity or otherwise, along the bottom or sides of an igneous instrusive mass, it is of high practical significance to the prospectors to note that most of the Pennsylvania deposits lie along the north edge of an apparently southward-pitching mass of serpentine. Four of the old mines are situated on the actual contact of serpentine and crystalline schists.

Nine abandoned mines on or near the serpentine boundary were examined. These mines extend from the old "Line Pit", three miles east of Susquehanna river, on the Mason and Dixon line, for a distance of nine miles eastward. Four of the shafts, of which the deepest is at the old Wood mine, long renowned as a collecting ground for rare minerals, disclose massive ore. Specimens of ore from the Wood mine were reported

to assay as high as 56 per cent of chromic oxide and to average 48 per cent. The remaining five mines and one old pit in an isolated area of serpentine about three miles north of the Maryland-Pennsylvania line, near the village of Texas, Lancaster county, show disseminated or spotted ore, known among the chrome miners of that region as "birdseye". In the prosperous days of the eastern chrome industry this ore was apparently not considered sufficiently valuable to repay the cost of concentration, because the massive ore could easily be cobbed and handsorted, the product being of sufficiently good quality to meet the demands of that period. Now that the country is certain to be short of chrome ore, which is urgently needed to supply the large demands of an industry that has become vital, the question of concentrating low-grade ores assumes new importance.

At several old mines in Lancaster county and at three in Chester county there appears to be a fair grade of concentrating ore. Estimates of the quantity of ore available are difficult to make, owing to the lack of other than surface indication, but the facts that at one mine about 2000 tons of spotted ore are lying on the dumps and that rock taken a few feet below the surface at a point about a mile and a half east of the mine contains spotted ore of the same character, indicate that a considerable quantity of similar ore may lie below the surface.

Analyses of average samples from the dumps mentioned above show 33.27 to 34.27 per cent by weight of chromite in the ore. An analysis of the chromite recovered by concentration from the samples shows 48.79 per cent of iron and alumina and 51.21 per cent of chromic oxide. The ore, which is nonmagnetic, occurs in black grains of brilliant luster. The gangue is a massive green serpentine that contains little or no asbestos, a fact that is of practical interest, for the presence of considerable asbestos in chrome ore makes concentration more difficult. Fragments of massive chromite found in the dumps indicate that nodules of massive ore, in addition to the spotted ore, are distributed through the serpentine. The nearest railway shipping point is less than two miles distant and is accessible by good roads.

Inasmuch as an ore that runs 33 per cent by weight of chromite contains about one part of chromite to two parts of waste, three tons of this spotted ore should contain one ton of chromite. About 60 per cent of the chromite content of such ores can be recovered, so that after proper allowance for losses in treatment, five tons of this ore should yield one ton of chromite.

In view of the facts stated concerning the geologic relations of the chromite deposits in this region and of the favorable market for the ore, the possibility of discovering and exploiting new deposits in southern Pennsylvania, as well as the practicability of working over some of the old mine dumps, should receive the attention of mining men who are interested in supplementing our inadequate domestic supply of chromite.

# Boilers Reclaim Melting Furnace Heat

BY C. D. TOWNSEND

AFTER considerable investigation of the various kinds of boilers, including horizontal, marine, and others, an upright water-tube boiler finally was selected as the equipment best suited for the utilization of waste heat from melting furnaces. The fact that the floor space required was comparatively small was an important factor in determining the choice. The next question was size, and the results of deliberations with the engineers were that it was preferable to have the boiler over-size rather than under-size. A 250-horsepower boiler was estimated to be of sufficient size, considering the grate area of the furnace; but because of what might be called a superheated gas after it has passed over a bath of molten metal, and because of its velocity, greater capacity was deemed advisable and a 400-horsepower boiler was finally decided upon as being adequate for any emergency.

In order to utilize the waste gases from the furnace and get constant results from the boiler, and also to keep the boiler under steam pressure all the time, it is best to have two furnaces and an auxiliary fire-box connected with the boiler. By running the furnaces one at a time during the day, a full head of steam can be kept on the boiler, except for intervals during the time of charging the furnaces, and for a short period while the cold stock is being thoroughly heated. This takes care of all firing necessary on the boiler for at least 9 hours of the day. During the balance of the day the boiler can be kept under pressure with a slight amount of fire through the auxiliary fire-box. One furnace is operated while the other is being repaired; and then the order is reversed.

### *Aiding Temperature Control*

The temperature control in the furnace and the efficiency of the boiler can be very materially aided by the addition of an induced-draft fan in the base of the stack. By operating this fan with a variable-speed motor or steam engine, the furnace draft can be regulated as desired. The use of the fan tends to hasten the time of melting and, due to the velocity with which the gases are drawn through the boiler, the efficiency is increased. The temperature in the base of this stack is approximately 800 degrees Fahr., and the temperature at the back bridge-wall of the furnace is about 2500 degrees Fahr. These figures show that a large volume of waste gas is used in making steam. With this equipment approximately 246,000 pounds of water are evaporated per day. In the auxiliary fire-box, from one to three tons of coal per day are used, according to requirements.

As before stated, connecting two 20-ton furnaces to the auxiliary fire-box of the boiler insures constant operation while furnace repairs are being made. With the use of the auxiliary fire-box, the boiler is kept under pressure during the night and at other periods while the furnaces are not in operation. By keeping the boiler constantly under pressure and heat, the danger of breakdowns caused by contraction and expansion is minimized.

The boiler should be set as close as possible to the back bridge-wall of each furnace in order to utilize all the waste gas possible. This can be accomplished by setting the furnaces parallel to each other or at right angles to the boiler, which arrangement should be figured out to best suit local conditions. To take care of the tremendous amount of gases that pass through the boiler during the period of melting, it is advisable to set the boiler eccentric with the casing, leaving the greatest area on the front or steaming side of the boiler so that the extremely hot gases have a chance to rush up the front side and become effective nearer the top of the boiler. On the other hand, if the boiler tubes are set close to the casing, the intense gases and impinging flames will

do most of their work on the tubes near the bottom of the boiler.

The water supply for a waste-heat boiler should be absolutely assured. It is best to have two independent sources of supply, since it is obvious that, if for any reason the water supply should fail, a heavy loss and probable calamity would result.

In the writer's opinion the most desirable use of a waste-heat boiler is when the full steam capacity of the boiler can be utilized. This can best be accomplished by using the waste-heat boiler in conjunction with a battery of hand-fired boilers, the steam pressure to be equalized and balanced by their use. In this way the waste-heat boiler serves as an auxiliary or a fluctuating source of steam supply to a boiler plant. If the steam line of a waste-heat boiler is connected directly into the steam log or header of the regular power-plant boilers, the hand-fired boilers can be run to the entire accommodation of the waste-heat boiler; that is, the hand-fired boilers can pick up the power load and carry it until the waste-heat boiler begins to come into service. Then the hand-fired boilers can be gradually slacked off and the fires banked, taking the full steam supply from the waste-heat boiler and thereby acting as a safety valve or regulator for it. It is apparent that in a waste-heat boiler there is no such thing as control of the steam supply. If all the steam that is made cannot be used, it has to be wasted.

A waste-heat boiler requires constant attention. It is most important to remember that the boiler is a fire-eater, and that to keep it on the ground the water supply must be *positive* and intelligently supplied. The boiler should be washed down and the tubes inspected for defects at least every three weeks, and the flues should be turbined, if necessary, not less than every six weeks. It is very important that treated water should be used to minimize the collection of boiler scale. Soot should be blown off the tubes at least three times a day. In fact, every possible care should be exercised to keep the tubes clean.

A 400-horsepower boiler connected with a 20-ton furnace operating at capacity will produce steam at the full capacity or a little in excess of the actual capacity of the boiler after the iron has been reduced to a semi-fluid state or say for 8 to 9 hours per day. There is no effect noticeable on the furnace operation and, in fact, the furnaces are operated entirely in disregard to the boiler connection. The fuel ratios do not change; neither do the furnace firing operations. In fact, the entire furnace conditions are absolutely normal, and should proceed in utter disregard of the boiler.

Another method of utilizing waste-heat is to set a boiler of convenient size alongside the neck of the furnace. With a variable speed induced-draft fan at the base of the boiler stack, sufficient gas could be diverted into the boiler to heat water or produce steam for various shop purposes, such as toilet uses, heating, etc.

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Radium has increased nearly threefold in price, since the war commenced. From approximately $1,000,000 an ounce early in 1914, it has advanced to about $2,800,000 an ounce. Practically the world's entire supply comes from the carnotite ore mined in Colorado and Utah, from which also are produced the rare metals uranium and vanadium.

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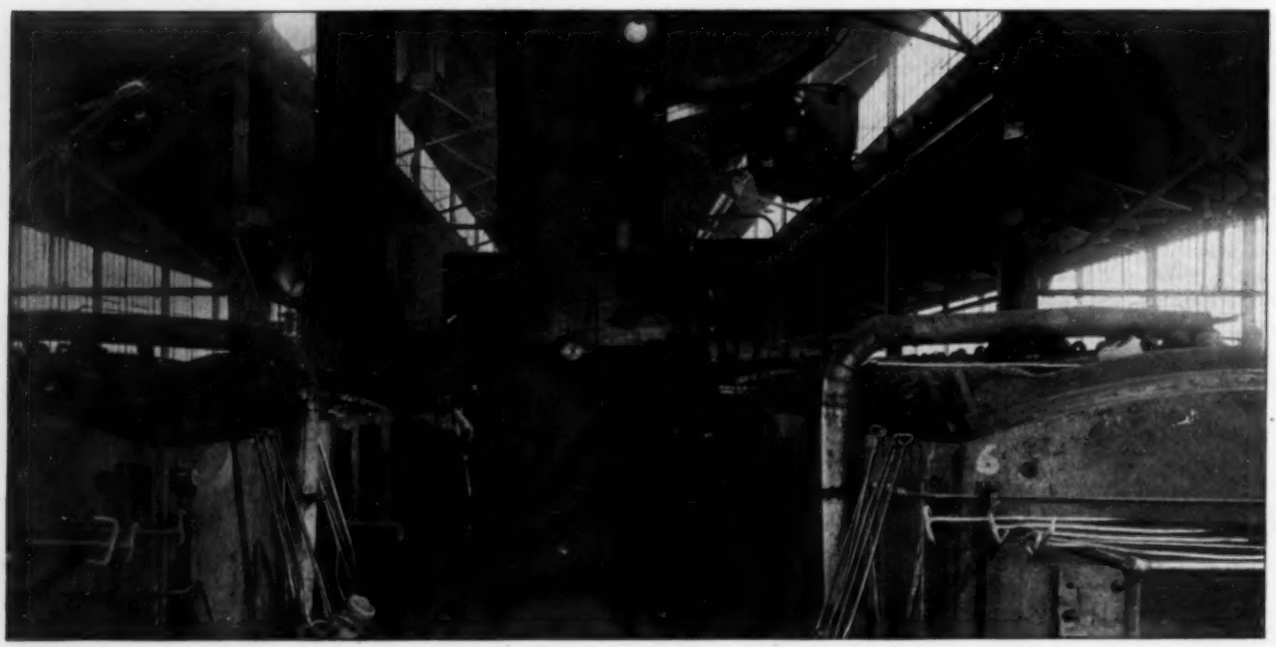
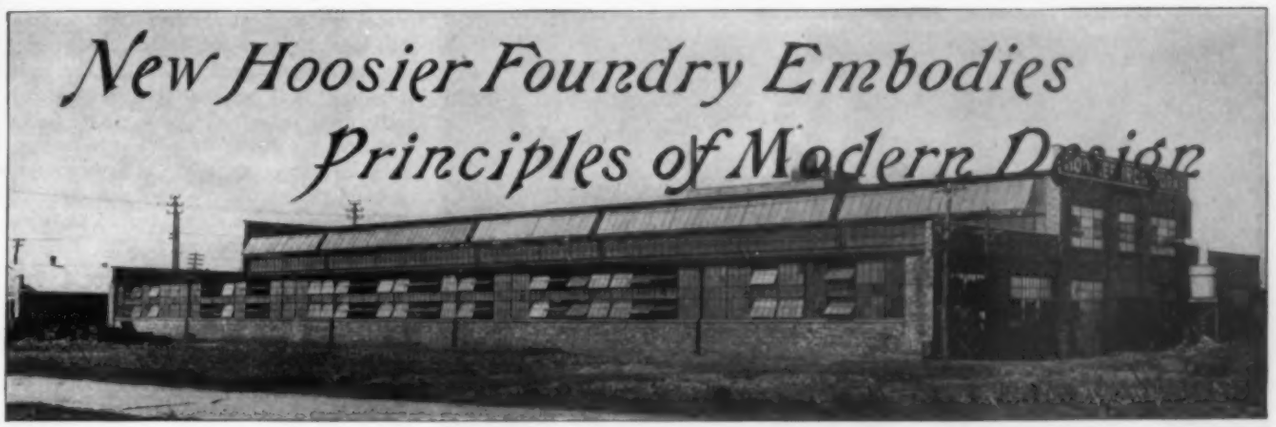
## Cooling Forgings By Compressed Air

A method of cooling forgings by compressed air has been developed by J. W. Dunphy, a Canadian engineer. Steel containing 0.42 per cent carbon, 0.063 silicon, 0.034 sulphur, 0.025 phosphorus, and 0.48 per cent manganese, which with appropriate heat treatment when cooling under atmospheric conditions gave a yield point of 18 tons and a tensile strength of 36 tons per square inch with 27 per cent elongation, after being cooled by compressed air is said to have improved its yield point to 22 tons and its tensile strength to 44 tons per square inch with 25 per cent elongation. The forging was a 9.2-inch shell, and the air consumption 2100 cubic feet per minute. The air was used at a pressure of 80 pounds per square inch and was delivered from a pair of 2-inch pipes, plugged at their ends, surrounding the forging and with fifty 3/16-inch holes each on its side facing the forging, while a 3-inch pipe with one hundred 3/16-inch holes along its length and ending in a special nozzle to cool the nose of the shell, cooled the inside. It took five minutes to reduce the forging from furnace heat to 800 degrees Fahr. While being cooled it rested on a pair of 4-inch rollers, one of which was driven by a compressed air motor, while the other ran as an idler. The 3-inch pipe supplying the compressed air to the cooling pipes was about 10 feet long, and had a loose joint at the top, so that all the pipes could be lifted and swung away when the forging was changed.



WASTE HEAT BOILER, SHOWING AUXILIARY FIRE BOX AND MELTING FURNACES

# New Hoosier Foundry Embodies Principles of Modern Design



Light, Ventilation and Crane Facilities are Features of the new Hoosier Foundry, Kokomo, Ind.

THAT all foundries are practically alike, except for differences in size and equipment, is the opinion formerly held by many old school foundrymen. A generation ago, any old building, light or dark, sanitary or not, served for a foundry. Light was not deemed necessary and windows were seldom cleaned. Broken panes were stuffed with rags and the openings were closed with boards. Little effort was made to lessen the dust arising from various operations. Man power carried all burdens not too great for human endurance.

But a new school of foundrymen and of engineers has developed during the last decade or so. Cleanliness, light and ventilation, together with complete provisions for carrying loads by mechanical means, have served to make the modern foundry far superior to its predecessors. The recently completed plant of the Hoosier Iron Works, Kokomo, Ind., designed by Frank C. Chase, industrial engineer, Chicago, is an excellent illustration of modern foundry construction.

### *Features of New Plant*

In designing the new foundry for the Hoosier Iron Works, the details of construction were so planned as to obtain a maximum building capacity with a minimum investment, without lessening in any degree the strength and solidity of the structure. The foundry is lighted by a maximum of window space. Ventilation is obtained through large, movable glass areas. The cupolas are enclosed in a brick building to prevent the circulation into the workshop of dust which arises from dumping. Of particular interest is the fact that every foot of the floor in the central and side bays is served by some type of crane. The crane equipment is unsually complete. The various units are adapted to the requirements of the particular duties necessary in their individual locations and to the loads they may be called upon to carry.

The foundry building is 130 feet wide and 240 feet long, divided into a central bay 50 feet wide and side bays 40 feet wide. The central bay is 30 feet high. Gypsum tile, light and fireproof, is used for the roof. This tile is laid in 5-foot courses. This construction permits the use of light roof trusses, thus effecting a considerable saving in the cost of the steel. The bays are 15 feet high at the eaves. Ten feet of glass running the full length of the building is pro-

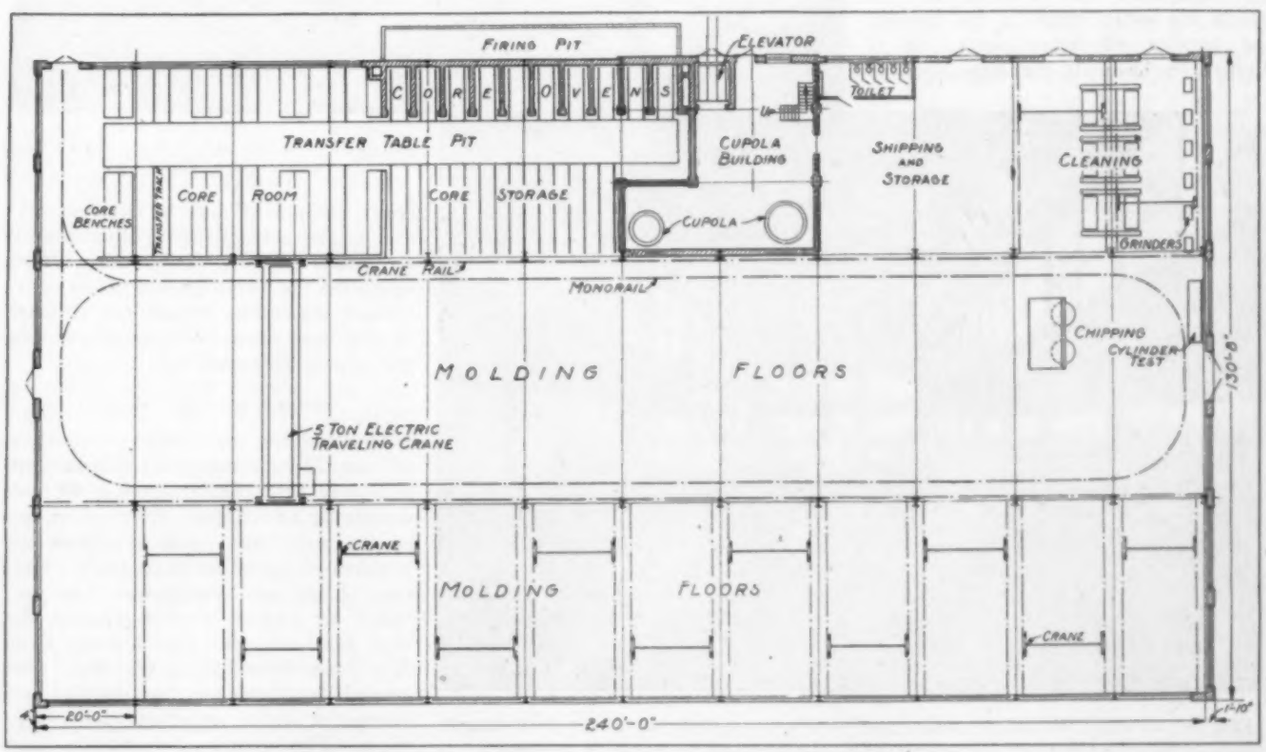



FIG. 1—FLOOR PLAN, SHOWING HOW THE CRANE EQUIPMENT IS ARRANGED TO SERVE ALL PARTS OF THE FOUNDRY

FIG. 2—A SIDE BAY WITH BRILLION CRANE IN BACKGROUND

vided in the monitors above the side bays. The upper 6 feet of this is continuous top-hung sash, which opens the full length of the wall. Each side bay has 9 feet of glass containing two rows of pivoted sash. The glass is continuous from column to column, there being no brick pilasters to reduce the glass area.

*Crane Equipment*

The comprehensive crane equipment is indicated in Fig. 1. The central bay is spanned by a 50-foot crane with one 5-ton hoist, made by the Whiting Foundry Equipment Co., Harvey, Ill. It travels the entire length of the foundry and handles all heavy work. It is planned to have all the large castings made in the central bay, thus leaving the side bays, with lighter equipment, for the lighter work. Circling the central bay and passing the opening of each division of the side bays, is a monorail consisting of a 12-inch I-beam, equipped for use with either electric or hand trolley. A switch connects with an extension of the monorail leading out to the material yard, with a *Y* to allow loads to be taken to either side of the bay.

*Side Bay Cranes*

Each division of the side bays is 20 feet wide and is quipped for cranes made by the Brillion Iron Works, Brillion, Wis. These cranes are of 1-ton capacity and travel on I-beams that extend to within a few inches of the monorail. The foundry is equipped with six of these cranes. Details of crane equipment may be seen in several of the accompanying illustrations. By means of these various units every operation of transportation is performed by cranes except the transfer of pig iron from the storage yard to the cupola elevator.

FIG. 4—VIEW OF MAIN BAY SHOWING MONORAIL TROLLEY

FIG. 3—GENERAL VIEW OF MAIN BAY—CUPOLA BUILDING IS AT THE RIGHT —MEANS OF LIGHTING AND VENTILATING ARE CLEARLY SHOWN

*Arrangement of Cupolas*

The melting equipment, consisting of two 72-inch cupolas, is housed in a 3-story brick building, 40 x 40 feet, occupying two 20-foot divisions in one of the side bays. Fig. 3 shows the position occupied by the cupola building. Light and ventilation are provided by ample window space. By thus separating the cupola room from the main foundry, gases and dust caused by dumping the cupolas are prevented from entering the workroom. The second or mezzanine floor

contains the positive pressure blower and the furnaces are charged on the floor above. An elevator opening from the pig iron yard and from the lower floor of the cupola room serves the buildings. A stairway is also provided. The construction is fireproof throughout.

The equipment of the cleaning room is unusually complete. A 2-ton crane with an air hoist aids in handling heavy castings. Ten tumbling mills and a cinder mill, 12 grinding stands and two sand-blast machines are in use in this department. The sand machines are equipped with dust collectors exhausting to the exterior of the building.

Preparation of sand for the molder is an important preliminary to the production of good castings. A centrifugal sand-mixing machine is employed to temper the sand. Six electric riddles handle the sand after tempering. On the molding floors, 31 molding machines of various types are employed, giving a large output of castings for the number of molders employed. The types of molding machines vary according to the kinds of molds being made.

The core ovens are situated in the side bay close to the cupola building. Two cylindrical core sand mixers prepare the sand. A 2-ton crane with air hoist takes the heavy lifts. Four car-type core ovens, each 7 x 13 feet and four 3-section drawer-type ovens, provide ample capacity for baking cores. Air pressure for the air hoists and other foundry purposes is derived from two compressors each 12 x 7½ x 12 inches. All machinery is operated by direct-connected motors.

FIG. 5—TUMBLING BARRELS AND GRINDERS IN ONE CORNER OF BAY

The Hoosier foundry specializes in automobile and machine tool castings, and has a daily capacity of 50 tons. The Hoosier Iron Works was incorporated in October, 1916. Work was started on the foundry in November. The first heat was poured April 11, 1917. The officers of the company are: J. W. Johnson, president; George Kingston, vice president; J. P. Grace, secretary and treasurer; John E. Fogarty, manager.

# The Sales Engineer Views the Foundry

MUCH has been written in reference to the lack of business methods in the foundry industry as a whole, and to the lack of appreciation of the importance of adopting progressive modern methods and labor-saving devices. Undoubtedly this criticism has been well merited, but it is also true that much has been done toward bringing the foundry up to a productive point comparing favorably with other lines of manufacture.

It would not be an exaggeration to say that for the past five years the method of producing castings has been revolutionized. The number of pieces produced in plants per man unit has been increased in some instances 500 to 1000 per cent. This has been due principally to the installation of molding machines, means for bringing iron to the floors, sand handling devices and equipment for handling the molds from the machines.

*Labor Demands Greater Share of Profits*

Never before in the history of the foundry industry have the demands for greater output been so insistent as at this time. Labor is constantly demanding a larger share of the profits of the industry, and I am sure that every right-minded man wants to see the rewards of labor increased. However, labor rewards cannot be increased by simply forcing up prices on one another, in order to get this increased wage. If the increase is to be permanent and such as can be met by the manufacturer, the production must be speeded up—where we are now getting one mold we must get at least three from no greater increase in the labor unit. To do this means better equipment and more knowledge of its use and possibilities. Those foundries that are operating entirely under old hand methods are being called upon to pay a higher wage than can possibly be afforded, and in many plants the hand molder is almost an impossibility when comparing the wages demanded to the production he is willing to turn out. This condition has forced many foundrymen to install not only molding machine equipment, but methods for handling iron in pouring off the work, and in fact any equipment that will save labor and reduce the number of men required.

It is generally stated as a fact that molders do not take kindly to molding machines, or in fact to the use of any other modern device that may be placed in the foundry. In many plants this has been demonstrated to be true, although the writer knows of plants where union molders in good standing work on molding machines and turn out a production in some cases 1000 per cent greater than was done when the work was made by hand. Moreover, the wage earned is more than double any union scale in the country.

*Prepare Against Curtailment of Production*

In stating this fact it is not intended to open up a discussion as to which is the better method—that of trying to work molders on machines or breaking in laborers to operate them—but rather to bring up the question before the foundry industry and to ask if it is looking far enough ahead with sufficient vision to meet the requirements. Is it taking the opportunity to organize the plants and to equip them so that their production will not be cut down? This is the important thing whether operating with molders or so-called

handy men. In these days when men are so scarce and the need of increased production is great proper means must be found to work both molders and handy men to their capacity.

It is the writer's opinion that the success or failure of modern equipment and particularly molding machines in any given plant depends on the state of mind. Unless complete co-operation is given from the head of the plant down through the superintendent, foreman, patternmaker or others in charge, no very considerable success will be obtained from either the working of molders on the machines or the use of laborers. The thought and co-operation necessary to make a success must be such as to make a careful analysis of the cost of production on given patterns, an understanding of the proper rigging of the patterns and the kind of flasks to be used, and the price basis established on a quantity production that will largely increase the wage of the operator as well as bring a largely increased production to the plant. It is not possible to get a largely increased production unless the operators are to share in this increase.

I have come in contact with owners of plants where a few machines have been installed, whose sole concern seemed to be how much they could cut the molding price on all patterns that they put on machines, and the idea uppermost appeared to be that the price of the equipment should be returned to them in the first few weeks or months of operation. Naturally no large production is ever obtained in plants where this policy is pursued. Unless the men in immediate charge of foundry production first make a careful study of the possibilities of the equipment which has been installed as to the amount of work it is capable of turning out and establishes a production that is somewhere near the capacity of the equipment, they are not in position to fix a price or a wage that will insure the machines being operated at their capacity. If the equipment installed is capable of earning 100 per cent on the investment, the responsibility of realizing this must be shared in a liberal way with the men who are asked to operate it.

*A Word About the Foundry Foreman*

It would seem at this point that a word regarding the foundry foreman would be worth considering. We cannot hold a man responsible for what he does not know and it is a certainty that most of the failures to get satisfactory production from machine equipment come from ignorance both as to the possibilities of the equipment, the amount of production that should be obtained and the wages that should be paid to get the production. There are foundries now operating in which this matter has been investigated so thoroughly and with such a broad vision that the matter of production and wages is causing them no trouble. It is not probable that these problems will bother the owners of these foundries greatly in the future, for they have builded well and they will keep well to the front, whatever demands may be made upon them. They will be in a position to properly meet all the varying changes, as they come up.

It would seem that the foundry industry as a whole could make no better investment than at every opportunity to have their foundry foremen, superintendents and those in immediate charge of production, visit modern plants, study equipment on exhibition at the different foundry shows, and encourage them to think along lines of conducting the foundries on business principles.

The foregoing remarks cannot be applied to all foundries, owing to conditions that exist as to buildings, room for installing equipment, etc., which will not permit of operating modern equipment to the maximum production, but it is the writer's belief that if plants now operating under these handicaps are to continue in the production of castings and to meet competition, these conditions will have to be changed.

# How Work Speed Affects Grinding

BY HOWARD W. DUNBAR

WITH variable work speeds in cylindrical grinding, it is possible to secure a wider range of wheel service than variable wheel revolutions could ever give. Satisfactory and nearly uniform results are secured from wheels varying from 2000 to 5500 surface feet per minute in speed and a variation from true grade within practical wheelmaking limits. Therefore, no necessity exists for variable revolutions for the grinding wheel, or close accurate limits of speed and grade of the grinding wheel.

Occasionally it becomes necessary to provide a change in the wheel revolution so that when a large wheel is worn down to a relatively small one, its surface speed can be brought back more nearly to the maximum limit. Recent experience, however, has led to the belief that the most efficient wheel for standard cylindrical grinding is one in which the hole is of such a size that the surface speed will be approximately 4000 feet when the wheel is worn out. This represents the low limit, and 6000 feet, when the wheel is new or full size, represents the high limit. The normal speed is then selected to give the highest possible efficiency.

Some grinding machine manufacturers are occasionally asked why they do not make machines provided with means for varying the spindle speed. One answer to this question is that the wide range of work speeds provided accomplished all that variable wheel spindle speeds could ever accomplish and, again, the method is simpler and less expensive. The means necessary to provide a graduated change of speed for the wheel spindle must be more complicated and expensive than means to provide for a change of speed in the work drive mechanism. Again, a given range of work speeds produces a wider range of effect than a much greater range of wheel spindle speeds could possibly give.

As an illustration, to obtain the same range of effect at variable wheel spindle speeds as can be obtained with a variable work speed of from 20 to 138 revolutions per minute, a change in spindle speed from 169 to 1233 revolutions per minute would be required. This represents a surface speed from 6400 feet, the highest speed that is considered safe, to 890 surface feet per minute. The latter is so slow that the wheel would wear away rapidly and be useless if the grade were soft enough to be effective at 6400 feet per minute surface speed.

After the work speed has been adjusted to obtain the best results, great care should be exercised to maintain a constant revolution of the wheel with no slippage of belting or momentary slowing up, due to lack of power. With irregular speed, minute particles of the material being ground adhere to the wheel face. This causes the wheel to cut less freely with the result that production is delayed and more power required. Wheels under heavy cuts slacken in speed sometimes to one-half normal and frequently they nearly stop. The disadvantage of this is not clearly understood. Grinding machines should not continue in operation with

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insufficient and irregular power. The quality and production of work suffers because constant power is not provided, if soft enough wheels for the power available are not used.

To maintain the wheel speed constant and to make all variations to suit conditions by adjusting work speeds, seems to be the most convenient plan.

# Labor Conditions in Munitions Plants

INTERESTING data on labor conditions in munition plants are included in a report on industrial efficiency in British munition factories, recently issued by the bureau of labor statistics, department of labor, Washington.

The bulletin presents the results of an exhaustive investigation in England, supplemented by experimental tests and comprehensive medical studies of individuals, covering the comparative efficiencies of workers on day and night shifts, with a view to determining whether or not hours worked at night unfavorably affect the capacity of the workers, and if so, the extent to which this impaired efficiency is reflected in reduced output.

It may be stated at the outset that the data collected are in all cases prejudicial to night work, which is therefore, although necessary in the present crisis, to be considered undesirable. But granting that night work must be performed, the committee found that the rate of output on the night shift is substantially the same as on the day shift, where both shifts are manned on the discontinuous system, but that continuous night work is productive of definitely less output than discontinuous night work. Among men working on a continuous day system it appears that the rate of output may be less and the loss of time greater than when they work on a discontinuous system, while among women of 19 years of age and upward, working for alternate weeks on day and night shifts, the timekeeping seems to be even better maintained than when working on permanent day shifts. The practical conclusion at which the committee arrives is that both men and women can more profitably be organized under the discontinuance than under the continuous system of night work.

### *Causes of Lost Time*

The causes and conditions of lost time were considered by the committee from two standpoints—lost time due to uncontrollable causes, chiefly sickness, accidents, weather, etc., and lost time attributable to controllable causes, that is, intemperance, overtime work, discontent with working conditions, etc. Particularly is the unprofitableness of extensive overtime emphasized, the committee showing how time gained by extraordinary hours may be lost in normal hours even under favorable factory conditions. This high percentage of loss, it was found, is mainly due to a very high sickness rate, itself the result of long hours on heavy work since the beginning of the war. In four selected cases where timekeeping was reasonably good and records carefully made, the unavoidable loss, chiefly due to sickness, was more than half the total loss. The strain of long hours seems to have had its effect not only upon operatives, but on officials and foremen who have broken down in considerable numbers.

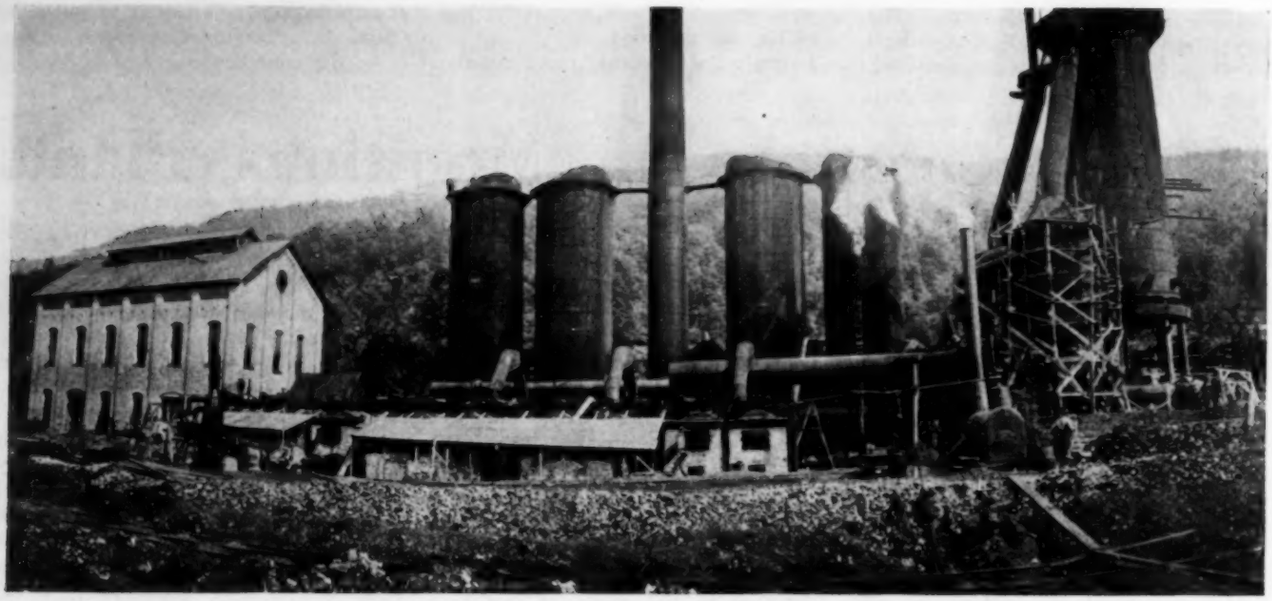
Another fruitful cause of lost time characterized by the committee as "uneconomical" and "unprofitable" is the practice long followed in Great Britain of requiring workers to put in a brief period before breakfast, the pause for the morning meal and the noonday meal constituting the so-called "two-break system" in contradistinction to the "one-break system," where operatives go to work after breakfast. In one factory working 53 hours per week and requiring work before breakfast, 30.9 per cent of the men lost 5 per cent of the possible normal hours, while in another factory also working 53 hours per week and requiring no work before breakfast only 1 per cent of the men lost 2.38 per cent of the possible normal hours, both on account of sickness.

In considering the matter of incentives to work, with special reference to wages, the committee was impressed by the fact that earnings influence the health and efficiency of workers, and that output may be influenced by the wage system in force. Many munition workers are paid for the time during which work is done, but this system was found to have no direct influence in stimulating inclination to work, since some workers may keep well within their powers while others, whose inclination to work is greater, may feel it is a grievance that extra work brings with it no extra rate. Payment by the piece, however, seems to bring a direct stimulus to bear upon the natural inclination to work. An illustration of these facts is presented in a table giving a comparison of time wages and piece rates, showing that 17 girls drilling fuses and working on the piece-rate basis in one week increased their output by 24 per cent on the day shift and by 40 per cent on the night shift, over what they were able to accomplish when doing the same work on a time-rate basis. Similarly, three girls retapping fuses by hand, working on a piece-rate basis, increased their output 28 per cent on the day shift and 48 per cent on the night shift over their output when working on a time-wage basis. For a wage scheme to act as an incentive to workers, it must be easily understood and equitably adjusted, must offer opportunity to spend the money earned, must create in the workers a desire to earn more, and must not lead to overspeeding. If the work is repetition work, such as is carried on in munition factories, especially if it be monotonous, it would seem that piece rates may be expected to give a greater output than time wages. Appended to the report is a discussion of wage systems at present in force in munition factories.

### *Time Lost Through Sickness*

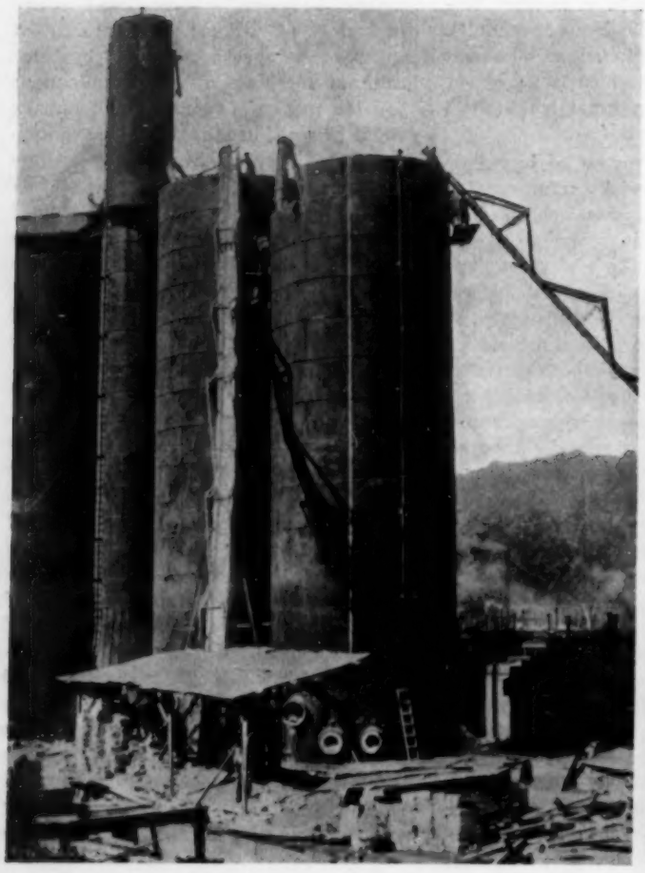
The medical studies, comprising Part II of the report, deal with examinations of 1543 men over military age, 1509 boys, and 1326 women and girls employed in factories in all parts of the country. Though evidence was found of strain and fatigue, the majority of the workers appeared to be in good health at the time of the examinations "and the medical examiners undoubtedly found less ill health than they anticipated." However, the committee does not assume that because no serious breakdown in health has yet occurred the risk of future breakdown is negligible. With reference to the men, sleepiness on the night shift, headache, footache, and muscular pains, coupled with nervous symptoms, are noted as the most common signs of overwork. Among the 1543 men examined the time lost during 12 months from all causes was 12,964 days, of which 20 per cent was due to accident and 80 per cent to sickness. The examination of women and girls emphasized the importance of adequate provision for the health and comfort of the workers.

The report describes the factory and social environment of the employes, and information is given as to the conditions under which workers lived and labored during the period covered by the investigation, including such matters as nature of the food eaten, housing and transit, the amount of sleep obtained by workers when on day shift and night shift, respectively, and the employment of married women.

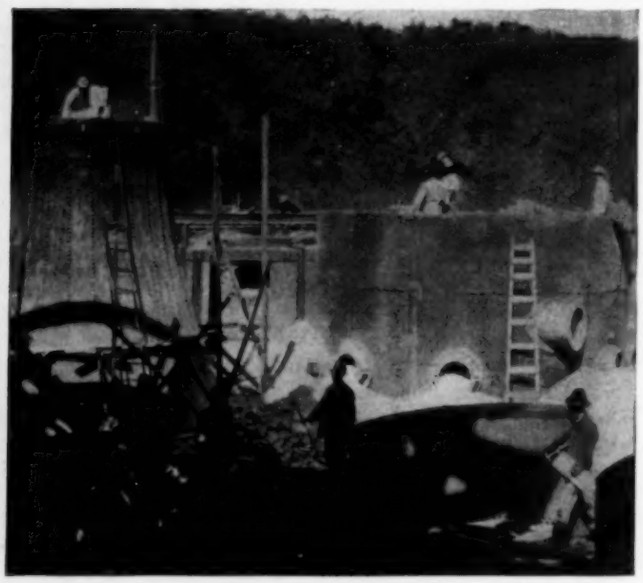


# Ships Battelle Stack Overseas

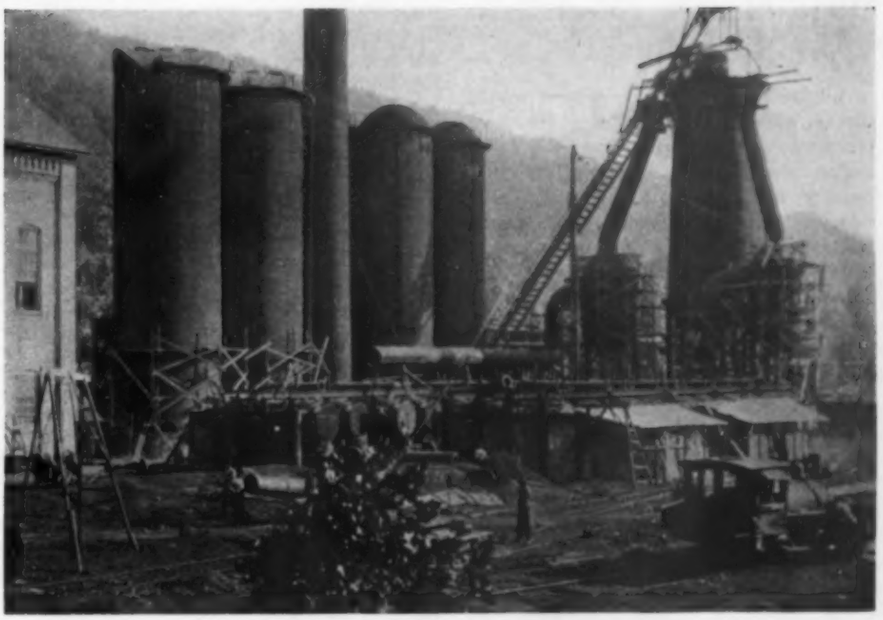
## Old Alabama Furnace of Lookout Mountain Coal & Iron Co. Which Was Sold to the Tata Iron & Steel Co. of Sakchi and Shipped to India Now Nears Its Destination

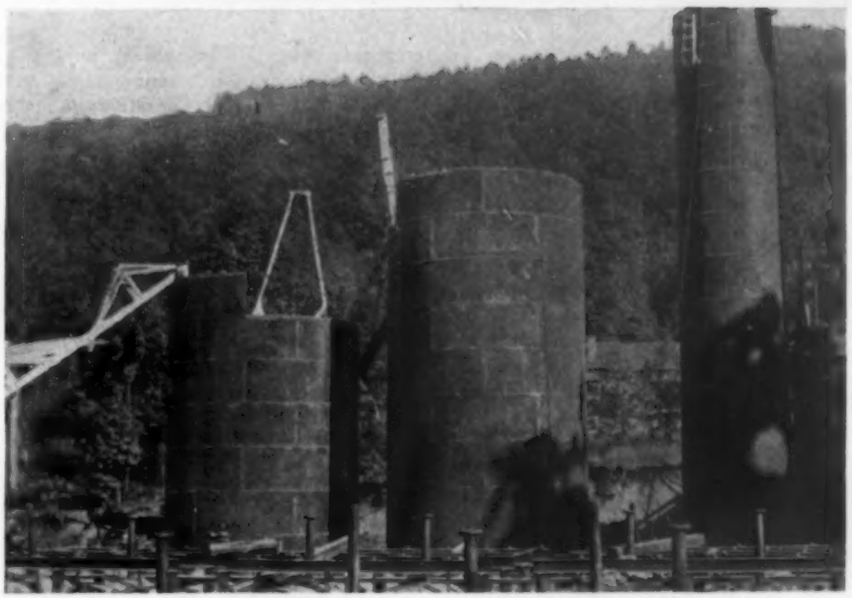


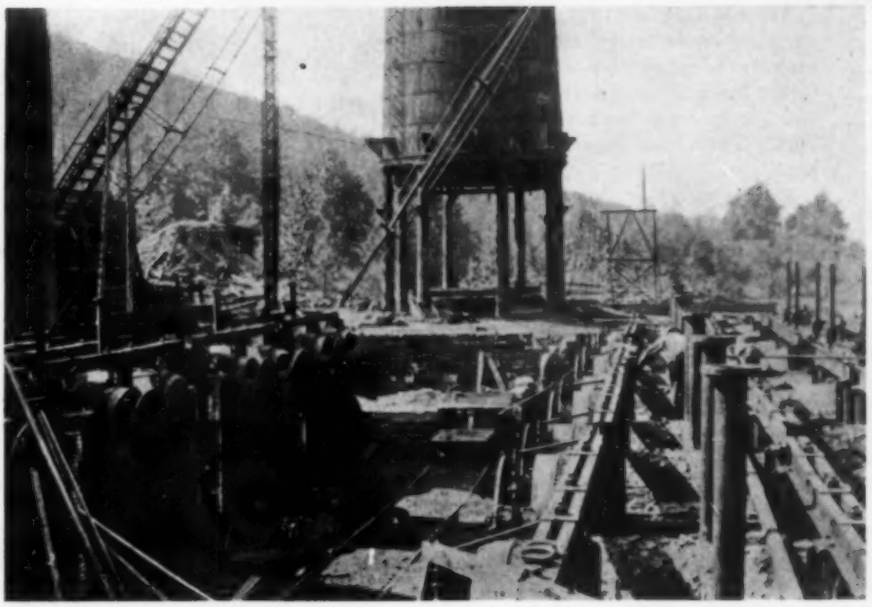
*WHEN the Battelle, Ala., blast furnace of the Lookout Mountain Coal & Iron Co. was erected in 1903, its owners would have been the last to picture its ultimate location far overseas. The Battelle blast furnace has been dismantled, shipped, and is nearing its destination at Sakchi, India. The Tata Iron & Steel Co. of Sakchi, expects to have the furnace reconstructed and operating before the end of 1918. The Battelle*



unit consists of an 85 x 19-foot stack and four 4-pass Whitwell stoves which are 80 x 20 feet in size. Through its American engineers, Perin & Marshall, of No. 2 Rector street, New York, the movable part of the property of the Lookout Mountain company in the upper portion of Alabama was purchased by the Tata interests. Perin & Marshall awarded a contract for dismantling and loading the entire plant to the Crawford-Vaughan Boiler & Locomotive Works of Birmingham, Ala. Some idea of the care which was used in dismantling may be gained from the fact that more than 90 per cent of the fire brick used in the installation was salvaged. The work was completed in 60 days. Among the more important components of the furnace unit which was removed are the following: One 250-ton stack; a complete skip hoist and revolving top; a cast shed 80 x 150 feet in size; four hot blast stoves, 80 x 20 feet in size; one draft stack, 10 x 180 feet; a standpipe 20 x 70 feet, and 20 boilers of 125 horsepower each. Hoists and engines were removed from the top of Lookout mountain where the company's coal mines are located, placed on trucks, and by means of winches lowered more than a mile down an incline of approximately 45 degrees. Crushers and boilers from the ore mines on the far side of the mountain were dismantled and transported by wagons over the mountain road to Sulphur Springs for further shipment via railroad to seaboard.







Approximately 250 railroad cars were required to handle the furnace and its equipment. The contract was completed on time and to the satisfaction of the engineers. The average number of men employed was 250, and in order to care for and feed this number special arrangements were made. After the dismantled stack arrived at seaboard, it was put on ships and dispatched to its destination via the Panama canal and over the Pacific to the port of Calcutta.

## Huge Merger Effected in Germany

A huge merger or arrangement within the German industry, probably the most comprehensive hitherto recorded, is the taking over, through more or less compulsory liquidation, of the de Wendel interests, and their passing into German ownership. The price amounts to about 350,000,000 marks, and the largest concerns in the German industry are interested in the venture, according to an article recently published in *Engineering*, London. It is further understood that an optional portion is being reserved for the German empire. The syndicate which takes over the de Wendel undertaking comprises Fried-Krupp, August Thyssen, the Gelsenkirchen concern, the Roechling concern, the Gute Hoffnungs Hutte, the Phoenix Co., and other members of the German steel union. It also includes concerns not belonging to the so-called "mixed group," and works which participate in the manufacture of high quality steel will have interests in the combine. The allotment of portions will to a great extent be arranged according to the iron and steel production of the different works. Among the special works admitted into the new concern is also that of Felton & Guilleaume, Mulheim, whose reason for joining is a desire to insure a more ample supply of iron ore for the Collart blast furnaces and steel works in Steinfurt, the whole of the share capital of which is held by the Felten & Guilleaume company. The allotment of the de Wendel Co. apportioned to Felten & Guilleaume is 3 per cent, and the same share has been given to the Mannesmann tube works in Dusseldorf. The share capital, according to the present arrangement, will be 100,000,000 marks, the rest of the purchase money being obtained through the medium of loans and long-term credits. The German empire is understood to be taking over 50 per cent of the entire share capital, another important move towards getting its hand into industry. The domicile of the de Wendel iron ore mining and iron works is Hayingen.

## Chinese Mining Practice

The acting British vice-consul at Canton, China, recently made public interesting information regarding the Chinese mining industry, particularly on activities in the provinces of Kuangtung, in which Canton is situated, and Kuangsi, on the western border. Both rare and common minerals, including gold, silver, antimony, wolfram, realgar, molybdenite, iron, manganese, cinnabar and tin, may be found in these two provinces.

The huge demands of the war stimulated China into some attempts to reap the advantages of a prosperous era. Chinese syndicates were formed by the dozen to snatch some of the profits of the high prices offering, but inasmuch as most of them entered the field in a speculative spirit, and their promoters were ignorant of the technicalities of mining, as well as of the world's markets, most of them soon collapsed. Under such circumstances it is not surprising that no real mining, in the proper sense of the word, has been done. The surface of the deposits is merely scratched, and the workings, which consist of gopher holes driven into the hillsides, are abandoned as soon as the lack of ventilation or the presence of water makes them unsafe. The real body of the ore or mineral is never reached at all. The coal that finds a local market is of an inferior quality, but experts are satisfied of the existence of vast beds of excellent steam coal, which only require efficient mining methods and supervision to yield handsome profits.

## New Tool Room Device

To locate and bore holes accurately in jigs, gages, dies and other tools calls for a degree of skill that is developed only through long practice. With the object of providing means for handling this class of work in a rapid manner by an ordinary machinist, the Precision System, Mount Joy, Pa., has recently placed a master tool on the market.

This device consists of a cast iron plate, 10 x 14 inches, provided with slots to accommodate the bolts that are used for clamping the work in place. At the ends and back of the plate hardened steel strips are placed. These are used for setting a series of gage blocks which are employed for locating the work to be bored.

At the back of the plate are two uprights which carry a bracket. This bracket is adjustable for height, its range being 7 inches, and at its outer end are inserted hardened steel bushings. These bushings guide a boring bar.

As the operator determines his distances by means of the gage blocks, it is apparent that accurate work can be done. The degree of accuracy depends wholly on the skill exercised in locating the work on the plate.

The complete outfit consists of the base plate, uprights and bushing bracket, together with two sets of 1, 2 and 3-inch gage blocks; six bushings, 0.250, 0.312, 0.412, 0.500 and 0.625-inch, respectively; two complete clamps and one universal boring bar. The manufacturers say that other makes of gage blocks can be used with this device.

## Magnesium Production in 1916 and 1917

According to statistics prepared for the United States geological survey by Frank L. Hess, four companies were responsible for the production in 1916 of all the magnesium in the United States, 75,400 pounds, valued at $311,570. In 1917 five companies produced 115,800 pounds, valued at $233,600. In spite of an increase of 65 per cent in quantity there was a decrease of 25 per cent in value, for the average price fell from $4.13 a pound in 1916 to $2.10 a pound in 1917. The price early in 1916 reached $5 a pound. Late in 1917 it fell to $1.85 a pound.

In 1916 magnesium was made by the Electric Reduction Co., Washington, Pa.; Norton Laboratories, Lockport, N. Y.; Rumford Metal Co., Rumford, Me.; and General Electric Co., Schenectady, N. Y. The Electric Reduction Co., finding it more profitable to use its power for other purposes, produced no magnesium in 1917. The American Magnesium Corp., the successor of the Aviation Materials Co. at Niagara Falls, and the Dow Chemical Co., Midland, Mich., both produced some magnesium in 1917 but the latter was prevented from operating at full capacity by shortage of coal. The General Electric Co., which in 1915 had been forced to make magnesium for its own use, closed its plant in 1917 when the industry became well established.

## To Tap Peruvian Coal Fields

A new railroad is to be constructed in Peru, from Huancayo to the coal deposits at Jatunhuasi, a distance of 46.6 miles according to an announcement made recently by Vice Consul Lynn W. Franklin, Callao-Lima, Peru. The road, it is estimated, will cost $1,500,000 and will tap coal fields on the main ridge of the Andes mountains. The money for the project has been guaranteed by the Italian bank at Lima, Peru.

The coal vein has an altitude of from 11,000 to 15,000 feet and dips at an angle of 30 degrees. Its running width is from 3 to 11 feet and its length approximately 40 miles. Mining to a depth of 2000 feet, it is believed that more than 50,000,000 tons will be accessible. The cost of mining a ton of coal has been estimated at $3 and its transportation to the coast, a distance of 260 miles, at $5.50, making the aggregate cost of production $8.50. The high cost of transportation is due to the mountainous nature of the country. Tests indicate that the coal is of good quality, averaging about 12 per cent ash, and can readily be employed for coking purposes.

# 1917 Lake Superior Ore Shipments

## All-Rail Movement of 1,938,102 Tons Carries Season's Total to 64,437,003 Tons—Official Figures Showing Tonnage Forwarded by Each Mine and by Ranges Last Year

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BY R. V. SAWHILL

THE rail shipments of iron ore from the Lake Superior district in 1917 aggregated 1,938,102 tons, making the total movement for the year 64,437,003 tons. These totals have just been determined by the official figures compiled by THE IRON TRADE REVIEW. The 1917 shipments showed a loss of 2,221,463 tons from 1916, when 66,658,466 tons were forwarded. This decrease was 3.33 per cent of the total movement during 1916, which year had shown a gain of 41.01 per cent of the 1915 movement.

The lake movement in 1917 was 62,498,901 tons, compared with 64,734,198 tons in 1916, a loss of 2,235,297 tons. The all-rail shipments of 1,938,102 tons, compared with a rail movement of 1,924,268 tons in 1916, a gain of 13,834 tons, or only 0.72 per cent. The all-rail movement was the largest of any year in the history of the district. The record of all-rail shipments since 1907 is as follows:

| | Gross tons | | Gross tons |
|---|---|---|---|
| 1917 | 1,938,102 | 1912 | 785,769 |
| 1916 | 1,924,268 | 1911 | 662,719 |
| 1915 | 953,947 | 1910 | 813,639 |
| 1914 | 707,829 | 1909 | 903,270 |
| 1913 | 876,638 | 1908 | 587,893 |

Shipments from the Lake Superior district by independent companies again were well above those of the Unted States Steel Corp. In 1917, the independents forwarded 55.66 per cent of the total tonnage, compared with 52.48 per cent in 1916. The 1917 record is the highest since the formation of the Steel corporation. Last year was the sixth successive year in which the independent companies have moved more than one-half of the ore shipped from the Lake Superior district. In 1915, the independents shipped 52.37 per cent of the total, compared with 50.99 in 1914, 50.94 in 1913 and 50.54 in 1912. In one other year since 1905 have the independents shipped the majority of the tonnage, that being 1910, when their percentage was 50.14. The percentage in 1906 was 47; 1907 and 1908, 44; 1909, 49.64, and 1911, 47.30. The strength of the independent ore interests is clearly revealed by their record of having forwarded more than one-half of the season's tonnage in seven of the last eight years.

The following table shows the shipments and percentages of the Oliver Iron Mining Co., the Steel corporation's mining organization, for each of the last 10 years:

| Year | Gross tons | Percentage |
|---|---|---|
| 1917 | 28,571,977 | 44.34 |
| 1916 | 31,673,131 | 47.52 |
| 1915 | 22,518,613 | 47.63 |
| 1914 | 16,039,654 | 49.01 |
| 1913 | 24,502,244 | 49.06 |
| 1912 | 23,845,363 | 49.46 |
| 1911 | 17,282,499 | 52.70 |
| 1910 | 21,661,143 | 49.86 |
| 1909 | 21,397,866 | 50.36 |
| 1908 | 14,123,957 | 56.00 |
| Total | 221,616,447 | 48.80 |

Shipments from the Mesabi range in 1917 were 41,445,211 tons, against 42,525,612 tons in 1916, a loss of 1,080,401 tons. Its percentage of the total shipments was 64.32, against 63.80 in 1916; 62.95 in 1915; 65.62 in 1914, and 68.15 in 1913. The Gogebic range again ranked as the second largest shipper, forwarding 7,981,684 tons, against 8,489,685 tons in 1916, a loss of 508,001 tons. Its percentage in 1917 was 12.39, against 12.74 in 1916; 11.59 in 1915; 10.90 in 1914, and 9.07 in 1913. The Menominee range also showed a decrease in the tonnage forwarded, its shipments for 1917 being 6,045,750 tons, compared with 6,364,363 tons in 1916, a loss of 318,613 tons. Its percentage was 9.38, against 9.55 in 1916; 10.54 in 1915; 9.83 in 1914, and 9.94 in 1913. The loss in tonnage on the Marquette range was 521,857 tons, the 1917 shipments being 4,874,150 tons, against 5,396,007 tons in 1916. Its percentage was 7.56 in 1917, against 8.09 in 1916; 8.68 in 1915; 7.61 in 1914, and 7.94 in 1913. The Vermillion range shipments were 1,530,692 tons, against 1,947,200 tons in 1916, a loss of 416,508 tons. Its percentage was 2.38, against 2.92 in 1916; 3.67 in 1915; 3.10 in 1914, and 3.14 in 1913.

All ranges with the exception of the Cuyuna forwarded less ore in 1917 than in the previous year. For all ranges except the Cuyuna and Vermillion, however, the 1917 mark easily surpasses that of any year prior to 1916. In the case of the Vermillion, the high-water mark was set in 1902, when 2,084,263 tons were shipped.

Shipments from the Cuyuna range continue to increase, passing the Vermillion total for the first time this year. The tonnage forwarded from the newest range last year was 2,422,884, compared with 1,716,218 tons in 1916, a gain of 706,666 tons. The Cuyuna's percentage of the total shipments for 1917 was 3.76, compared with the 1916 percentage of 2.57. In 1915 the Cuyuna's percentage was 2.40; in 1914, 2.62, and in 1913, 1.47.

Eleven mines shipped more than one million tons last year, these mines being the Adams, Canisteo, Fayal, Hull-Rust, Kerr, Mahoning, Morris and Sellers on the Mesabi; Newport, Norrie Group, and Wakefield on the Gogebic. In 1916, 12 mines shipped more than one million tons, these mines being the Burt, Canisteo, Fayal, Hull-Rust, Leonidas, Mahoning, Morris, and Sellers on the Mesabi; Newport, Norrie Group and Wakefield on the Gogebic, and Cleveland-Cliffs Group on the Marquette. In 1915 there were seven mines which reached this figure, they being the Burt, Canisteo, Hull-Rust Mahoning, Morris and Sauntry-Alpena on the Mesabi and the Norrie Group on the Gogebic. In 1914 only four mines shipped more than one million tons,

### Comparative Shipments by Ranges, 1917-1916

| | 1917 | 1916 | Decrease |
|---|---|---|---|
| Mesabi | 41,445,211 | 42,525,612 | 1,080,401 |
| Menominee | 6,045,750 | 6,364,363 | 318,613 |
| Gogebic | 7,981,684 | 8,489,685 | 508,001 |
| Marquette | 4,874,150 | 5,396,007 | 521,857 |
| Vermillion | 1,530,692 | 1,947,200 | 416,508 |
| Cuyuna | 2,422,884 | 1,716,218 | *706,666 |
| Mayville and Baraboo | 136,632 | 219,381 | 82,749 |
| Totals | 64,437,003 | 66,658,466 | 2,221,463 |
| By lake | 62,498,901 | 64,734,198 | 2,235,297 |
| By rail | 1,938,102 | 1,924,268 | *13,834 |

*Increase.

# Graphic Record of Shipments by Ranges for the Past 28 Years

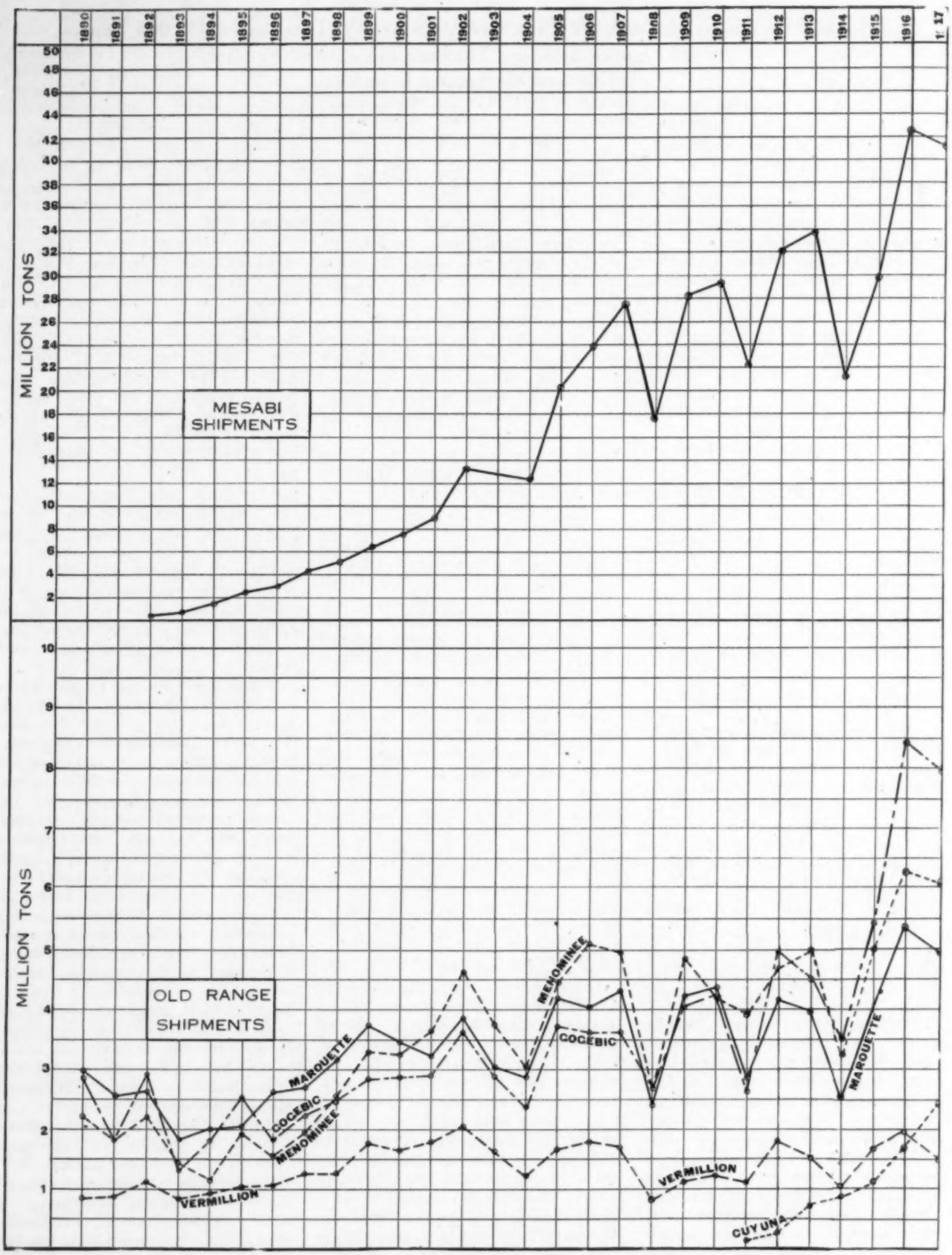


CHART SHOWING SHIPMENTS OF IRON ORE FROM MESABI RANGE, 1892-1917; OTHER RANGES, 1890-1917

# Official Record of Shipments from Lake Superior District in 1917 and 1916, Gross Tons

## MESABI RANGE

| | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams | 1,546,546 | 961,500 | Genoa | 180,923 | 274,172 | Leonard-Burt | 448 | 482,580 | Sauntry-Alpena | 596,049 | 933,937 |
| Adriatic | 90,283 | 220,818 | Gilbert | ..... | 70,187 | Leonidas | 795,826 | 1,147,105 | Schley | 777 | 78,093 |
| Agnew | 110,001 | 102,150 | Glen | 443,446 | 284,889 | Lincoln | 276,678 | 286,128 | Sellers | 1,575,057 | 1,344,121 |
| Albany | 455,182 | 468,291 | Grace | 81,815 | 81,289 | Lone Jack | ..... | 61,994 | Shaw | 1,841 | ..... |
| Alexandria | 136,795 | ..... | Graham | 238,904 | 228,406 | Mace | 373,780 | 470,794 | Shenango | 680,258 | 979,658 |
| Arcturus | 314,049 | ..... | Grant | ..... | 110,604 | Madeira | 7,125 | ..... | Shiras | 191,042 | 172,518 |
| *Atlas | 15,977 | ..... | Hanna | 136,114 | 124,021 | Madrid | 43,943 | ..... | Sliver | 168,953 | 156,638 |
| Bangor | 155,053 | 223,576 | Harold | 145,966 | 216,567 | Mahoning | 2,524,110 | 2,215,788 | Smith | 253,223 | ..... |
| Belgrade | 218,596 | 180,532 | Harrison | 19,251 | 32,876 | Majorca | 112,394 | ..... | Spruce | 352,563 | 463,179 |
| Bennett | 783,826 | 672,572 | Hartley-Burt | 310,264 | ..... | Malta | ..... | 66,573 | St. James | 184,885 | 36,066 |
| Biwabik | 342,570 | 428,944 | Hawkins | 721,211 | 602,760 | Meadow | 96,191 | 50,763 | Stevenson | 344,872 | 349,960 |
| Bray | 56,011 | ..... | Helmer | 259,777 | 395,615 | Midget | 113,003 | ..... | Susquehanna | 609,198 | 764,249 |
| Brunt | 112,289 | 162,290 | Higgins | ..... | 162,216 | Miller | 312,875 | 252,404 | Thorne | 74,997 | 81,692 |
| Burt | 692,017 | 1,060,487 | Hill | ..... | 552,104 | Minnewas | ..... | 11,027 | Tioga | 80,758 | 4,275 |
| Canisteo | 1,643,226 | 1,943,745 | Hill Annex | 250,889 | ..... | Missabe Mt | 62,931 | 539,913 | Troy | ..... | 6,631 |
| Cavour | 5,043 | 134,632 | Holland | 6,523 | 29,448 | Mississippi | 99,983 | ..... | Union | 229,380 | 241,991 |
| Chester | 354,824 | 73,401 | Holman | 835,464 | 610,281 | Mohawk | 267,204 | 185,313 | Uno North | 177,028 | 70,588 |
| Chisholm | 382,184 | 263,820 | Hudson | 78,963 | 110,510 | Morris | 1,605,701 | 1,609,971 | Uno South | 99,992 | ..... |
| Clark | 266,710 | 251,226 | Hull-Rust | 6,461,443 | 7,665,611 | Morrow (new) | 69,554 | ..... | Utica | 245,314 | 326,360 |
| Commodore | 405,827 | 579,285 | Itasca | 197,472 | 275,108 | Morton | 1,832 | 44,940 | Victoria | 71,597 | 71,614 |
| Corsica | 389,083 | 292,228 | Jean | 78,522 | 3,927 | Myers | 41,974 | 58,898 | Wacootah | 73,908 | 101,970 |
| Crosby | 187,938 | 110,652 | Judd | 50,278 | 50,263 | Norman | 128,861 | 320,937 | Wanless | 195,552 | 141,726 |
| Cyprus | 29,024 | 15,913 | **Julia | 43,694 | ..... | North Eddy | 163,974 | 104,710 | Warren | 94,030 | ..... |
| Dale | 10,423 | 29,971 | Kerr | 1,586,409 | 539,675 | No. Harrison | 305,810 | 422,825 | Webb | 210,593 | 140,279 |
| Deacon | 117,711 | 98,634 | Kevin | 35,846 | 265,868 | Ohio | ..... | 23,665 | Weed | 87,111 | 113,447 |
| Dean | 769,660 | 687,878 | Kinney | 184,591 | 465,263 | Ordean | 383,968 | 395,591 | Whiteside | 31,301 | ..... |
| Duncan | 5,013 | 5,198 | Knox | 78,266 | 70,235 | Patrick | 95,888 | ..... | Winifred | 16,249 | 69,765 |
| Dunwoody | 369,739 | ..... | La Belle | 71,546 | 14,765 | Pearson | 9,443 | ..... | Woodbridge | 236,442 | 279,284 |
| Eddy | ..... | 11,782 | Lamberton | 20,187 | ..... | Perkins | 80,942 | 79,281 | York | 55,131 | ..... |
| Elba | 122,459 | 130,384 | Warren 40 | 12,792 | 47,481 | Pettit | 192,920 | 178,917 | | | |
| Fault | 33,710 | ..... | Langdon & | | | Philbin | 204,510 | 110,922 | | | |
| Fayal | 2,037,705 | 2,288,799 | La Rue | 330,349 | 253,402 | Prindle | ..... | 10,995 | Total | 41,445,211 | 42,525,612 |
| Fowler | 11,137 | 29,711 | Laura | 105,515 | 188,569 | Quinn | 85,297 | 226,360 | | | |
| Franklin | 73,855 | 54,002 | Leetonia | 402,868 | 656,876 | Ruddy | 3,331 | 57,300 | | | |
| Frantz | 78,302 | ..... | Leonard | 305,537 | 316,468 | Rutland | 49,021 | ..... | | | |

*Formerly Roberts.
**Formerly Bessemer.

## MENOMINEE RANGE

| | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Amasa-Porter | 116,148 | 80,492 | Chatham | 244,934 | 188,808 | Homer | 202,351 | 161,286 | Riverton Group | ..... | 174,992 |
| Antoine | | | Chicagon | 90,786 | 100,640 | Indiana | 46,480 | 44,162 | Rogers | 117,323 | 81,842 |
| (Clifford) | 115,823 | 113,101 | Commonwealth | | | James | 171,001 | 167,115 | Spies | 6,310 | ..... |
| Aragon | 276,434 | 244,478 | (Buckeye) | ..... | 81,479 | Judson | 60,235 | 162,519 | Tobin | 188,590 | 146,113 |
| Balkan | 261,014 | 229,195 | Cottrell | ..... | 75,089 | Loretto | 193,950 | 174,173 | Tully | 121,426 | 236,302 |
| Baltic | 89,307 | 110,965 | Davidson | 223,990 | 164,248 | Michigan | ..... | 28,483 | Virgil | ..... | 36,307 |
| Bates | 141,890 | 73,188 | Ernst | 70,416 | 74,879 | Monongahela | ..... | 21,922 | Wapama | 16,032 | ..... |
| Bengal | 260,377 | 140,961 | Florence | 47,193 | 28,240 | Munro | 46,960 | 17,621 | Warner | 74,814 | 33,751 |
| Berkshire | 57,791 | 38,467 | Fogarty | 37,291 | 89,506 | Odgers | 169,668 | 53,177 | Wickwire | 242 | 13,265 |
| Bristol (Claire) | 188,907 | 462,559 | Forbes | ..... | 121,010 | Penn Iron Min- | | | Youngs | 23,197 | 53,691 |
| Carpenter | 269,387 | 240,114 | Gt. Western | 7,692 | ..... | ing Co | 459,784 | 427,266 | Zimmerman | 219,873 | 145,716 |
| Caspian | 411,705 | 448,631 | Hemlock | ..... | 72 | Pewabic | 153,256 | 301,125 | | | |
| Chapin | 682,349 | 557,485 | Hiawatha | 62,847 | 187,070 | Ravenna | 37,848 | 3,476 | | | |
| | | | Hilltop | 36,239 | ..... | Richards | 43,890 | 29,382 | Total | 6,045,750 | 6,364,363 |

## MARQUETTE RANGE

| | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams (Amer. | | | Cleve. Cliffs | | | Maas | 313,399 | 267,946 | Stegmiller | 41,526 | 65,420 |
| Min. Co.) | 22,560 | 7,820 | Group | 946,410 | 1,036,775 | Mary Charlotte | 247,854 | 228,374 | Stephenson | 496,713 | 355,166 |
| American | | | Empire | 38,392 | 47,110 | *Morris-Lloyd | 303,253 | 339,603 | Volunteer | ..... | 106,988 |
| (Sterling) | 142,526 | 245,969 | Gwynn | 188,070 | 143,708 | Negaunee | 573,760 | 523,736 | Washington | 12,605 | 6,631 |
| Austin | 44,421 | 64,521 | Holmes | 53,726 | 3,379 | Princeton | | | | | |
| Beaufort (Ohio) | 108,901 | 40,009 | Iron Mt. Lake | ..... | 5,893 | (Swanzey) | 150,375 | ..... | | | |
| Breitung | | | Isabella | 63,446 | 134,938 | Queen Group | 88,178 | 283,775 | Total | 4,874,150 | 5,396,007 |
| (Hematite) | 191,952 | 153,607 | Jackson | 47,836 | ..... | Republic | 168,250 | 209,060 | *Formerly shown separately as | | |
| Cambria | 114,031 | 195,612 | Lake Angeline | 54,673 | ..... | Richmond | 148,834 | 181,154 | Morris and Lloyd. | | |
| Chase | ..... | 72,345 | Lake Superior | 312,459 | 422,525 | Rolling Mill | ..... | 253,943 | | | |

## GOGEBIC RANGE

| | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Anvil | 54,407 | ..... | Eureka | 191,630 | 207,959 | No. Newport | 13,737 | 48,070 | Tilden | 108,641 | 110,733 |
| Ashland | 38,164 | 82,715 | Geneva | 113,804 | 86,922 | Ottawa | | | Townsite | 25,970 | ..... |
| Asteroid | 93,265 | 89,876 | Ironton | 244,517 | 148,191 | (Odanah) | 215,401 | 309,554 | Wakefield | 1,144,411 | 1,061,730 |
| Brotherton | 84,524 | 107,813 | Keweenaw | 130,374 | 121,014 | Palms | 481,465 | 529,751 | Yale (West | | |
| Cary | 253,260 | 308,834 | Mikado | 30,833 | 23,741 | Plymouth | 658,265 | 330,427 | Colby) | 73,633 | 149,155 |
| Castile | 82,248 | 133,162 | Montreal | 458,658 | 530,813 | Puritan | 224,082 | 308,534 | | | |
| Colby | 353,880 | 423,553 | Newport | 1,003,229 | 1,315,980 | Royal | 30,302 | 11,527 | | | |
| Davis (Wis.) | 28,234 | 4,997 | Norrie Group | 1,646,606 | 1,855,863 | Sunday Lake | 198,144 | 188,771 | Total | 7,981,684 | 8,489,685 |

## VERMILLION RANGE

| | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|
| Chandler | 202,828 | 311,793 | Section 30 | 223,123 | 226,089 |
| Consolidated | | | Sibley | 198,378 | 237,258 |
| Vermillion | 16,464 | 1,436 | Soudan | 150,668 | 142,688 |
| McComber | 4,068 | ..... | Zenith | 382,666 | 482,783 |
| Pioneer | 352,497 | 507,086 | | | |
| Savoy | ..... | 38,067 | Total | 1,530,692 | 1,947,200 |

## MAYVILLE-BARABOO RANGES

| | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|
| Cahoon | 42,635 | 87,802 | Mayville | 93,997 | 125,970 |
| Illinois | ..... | 5,609 | Total | 136,632 | 219,381 |

## CUYUNA RANGE

| | 1917 | 1916 | | 1917 | 1916 |
|---|---|---|---|---|---|
| *Algoma | 22,097 | 24,035 | Meacham | 160,677 | 25,207 |
| Armour No. 1 | 80,435 | 77,034 | Merritt | 28,003 | ..... |
| Armour No. 2 | 273,812 | 341,147 | **Omaha | 61,170 | 50,454 |
| Croft | 149,899 | 68,867 | Pennington | 165,895 | 206,085 |
| Cuyuna Mille- | | | Rowe | 151,048 | 180,239 |
| Lacs | 112,554 | 90,564 | State Lease | 81,394 | 331 |
| Cuyuna-Sultana | 62,651 | 35,169 | Thompson | 177,426 | 185,032 |
| Ferro | 62,674 | 14,501 | | | |
| Hill Crest | 175,940 | 19,431 | | | |
| Ironton | 64,446 | 51,769 | | | |
| Joan No. 1 | 3,490 | ..... | Total | 2,422,884 | 1,716,218 |
| Joan No. 4 | 4,875 | ..... | *Formerly Hoch, also Iron Moun- | | |
| Kennedy | 247,421 | 166,915 | tain. | | |
| Mahnomen | 284,686 | 146,602 | **Formerly Wilcox. | | |
| Mangan | 52,291 | 32,836 | | | |

| | 1917 | 1916 |
|---|---|---|
| GRAND TOTAL | 64,437,003 | 66,658,466 |

they being the Leonard, Mahoning, Sauntry-Alpena and Canisteo, all on the Mesabi. In 1913, eleven mines reached the 7-figure mark in shipments, they being the Adams, Canisteo Fayal, Genoa, Hull-Rust, Leonard, Mahoning, Sauntry-Alpena and Uno South on the Mesabi and the Norrie Group and Newport on the Gogebic. Eleven mines also reached that figure in 1912, they being the Canisteo, Dale, Genoa, Hill, Hull-Rust, Leonard, Mahoning, Sauntry-Alpena and Uno South on the Mesabi, the Norrie Group on the Gogebic and the Cleveland-Cliffs Group on the Marquette.

The wonderful Hull-Rust mine was the leading shipper last year, forwarding the immense total of 6,461,443 tons, or more than the shipments from any of the ranges excepting the Mesabi and Gogebic. The shipments from this mine in 1916 were 7,665,611 tons, its previous record being made in 1913 with 3,457,608 tons. Two other mines shipped more than two million tons last year, the Mahoning with 2,524,110 tons and the Fayal with 2,037,705 tons. The Mahoning was the leading shipper in 1915, with 2,311,940 tons. The Hull-Rust has been the leading shipper in eight of the last 11 years, the Hill leading in 1911, and the Leonard in 1914.

The following new mines shipped in 1917:

On the Mesabi: Alexandria, of the Hanna Ore Mining Co.; Arcturus and Shaw, of the Oliver Iron Mining Co.; Dunwoody and Warren, of the Tod-Stambaugh Co.; Fault and Rutland, of the Kingston Mining Co.; Lamberton, Patrick and Smith, of Butler Bros.; Majorca, of Pickands, Mather & Co.; Midget, of Winston & Dear; and York, of Coates & Tweed.

On the Menominee: Spies, of the Cleveland-Cliffs Iron Co.; and Wapama, of the Wapama Iron Co.

On the Cuyuna: Joan No. 1 and Joan No. 4, of the Joan Mining Co.; and Merritt, of the Merritt Development Co.

On the Gogebic: Townsite, of Coates & Tweed.

On the Vermillion: McComber, of the Mutual Iron Mining Co.

The total of 20 new shippers in 1917 is two less than in either 1916 or 1915, the new mines opened in those years numbering 22. In 1914, 16 new mines were opened; 20 in 1913; 13 in 1912; and 12 in 1911. Thirteen of the new mines shipping last year are located on the Mesabi, two on the Menominee, three on the Cuyuna and one each on the Gogebic and Vermillion. Shipments from the new mines totaled 1,737,759 tons in 1917, compared with 2,357,850 tons in 1916; 1,203,213 tons in 1915; 677,182 tons in 1914; 831,567 tons in 1913; 361,904 tons in 1912, and 1,769,423 tons in 1911.

Shipments from Canadian mines in 1917 were as follows: Helen, of the Algoma Steel Corp., 90,059 tons, and Magpie, of the Algoma corporation, 174,774 tons. The Helen shipped 37,272 tons in 1916; 220,771 tons in 1915; 80,860 tons in 1914; 42,550 tons in 1913, and 48,838 tons in 1912. The Moose Mountain, which was idle in 1917, shipped 5338 tons in 1916; 40,444 tons in 1915; 29,457 tons in 1914; 102,238 tons in 1913, and 39,061 tons in 1912. The Magpie shipped 187,809 tons in 1916; 107,560 tons in 1915; 98,070 tons in 1914, and 19,934 tons in 1913. The shipments for the Canadian mines are not included in the total for Lake Superior ore shipments.

In 1917, 246 mines shipped, compared with 233 mines in 1916; 209 in 1915; 196 in 1914; 223 in 1913, and 194 in 1912. Of those shipping last year, the Mesabi had 122, Menominee 41, Marquette 25, Gogebic 27, Cuyuna 21, Vermillion 8 and Mayville-Baraboo 2. In 1916, the Mesabi shippers numbered 107, Menominee 45, Marquette 27, Gogebic 25, Cuyuna 18, Vermillion 8 and Mayville-Baraboo 3.

The following table shows the average shipments of all of the mines on the six leading ranges and of the whole Lake Superior district for 1917 and 1916 in gross tons:

AVERAGE MINE SHIPMENTS

| | 1917 | 1916 |
|---|---|---|
| Mesabi | 339,715 | 397,436 |
| Gogebic | 295,618 | 339,585 |
| Vermillion | 191,336 | 243,400 |
| Marquette | 194,966 | 119,852 |
| Menominee | 147,457 | 141,430 |
| Cuyuna | 115,375 | 95,345 |
| Lake Superior district | 261,939 | 286,087 |

## Large Ore Chart

*A chart 26 x 30 inches has been published by* THE IRON TRADE REVIEW, *which shows annual shipments of each mine since* 1898, *a period of 20 years, together with the grand total for every mine since the opening of the district. The chart is similar to those issued annually by* THE IRON TRADE REVIEW *prior to* 1912, *but is larger, more complete and more legible. The chart can be secured from* THE IRON TRADE REVIEW, *Penton building, Cleveland, for* $1.

## Shipments by Ports and All Rail, Gross Tons

| | 1917 | 1916 | 1915 | 1914 | 1913 | 1912 |
|---|---|---|---|---|---|---|
| Escanaba | 7,156,854 | 7,457,444 | 5,649,289 | 3,664,451 | 5,399,444 | 5,234,655 |
| Marquette | 3,207,145 | 3,858,092 | 3,099,589 | 1,755,726 | 3,137,617 | 3,296,761 |
| Ashland | 7,597,841 | 8,057,814 | 5,146,772 | 3,363,419 | 4,338,230 | 4,797,101 |
| Two Harbors | 9,990,901 | 10,735,853 | 8,642,942 | 5,610,262 | 10,075,718 | 9,370,969 |
| Superior | 13,978,741 | 12,787,046 | 8,342,793 | 11,309,748 | 13,788,343 | 14,240,714 |
| Duluth | 20,567,419 | 21,837,949 | 15,437,419 | 6,318,291 | 12,331,126 | 10,495,577 |
| Total by lake | 62,498,901 | 64,734,198 | 46,318,804 | 32,021,897 | 49,070,478 | 47,435,777 |
| Total by rail | 1,938,102 | 1,924,268 | 953,947 | 707,829 | 876,638 | 785,769 |
| Total | 64,437,003 | 66,658,466 | 47,272,751 | 32,729,726 | 49,947,116 | 48,221,546 |

## Shipments by Ranges, Gross Tons

| | 1917 | 1916 | 1915 | 1914 | 1913 | 1912 |
|---|---|---|---|---|---|---|
| Marquette | 4,874,150 | 5,396,007 | 4,105,378 | 2,491,857 | 3,966,680 | 4,202,308 |
| Menominee | 6,045,750 | 6,364,363 | 4,982,626 | 3,221,258 | 4,965,604 | 4,711,440 |
| Gogebic | 7,981,684 | 8,489,685 | 5,477,767 | 3,568,482 | 4,531,558 | 5,006,266 |
| Vermillion | 1,530,692 | 1,947,200 | 1,733,595 | 1,016,993 | 1,566,600 | 1,844,981 |
| Mesabi | 41,445,211 | 42,525,612 | 29,756,689 | 21,465,967 | 34,038,643 | 32,047,409 |
| Cuyuna | 2,422,884 | 1,716,218 | 1,136,113 | 859,404 | 733,021 | 305,111 |
| Mayville and Baraboo | 136,632 | 219,381 | 80,583 | 105,765 | 145,010 | 104,031 |
| Total | 64,437,003 | 66,658,466 | 47,272,751 | 32,729,726 | 49,947,116 | 48,221,546 |

## Increases Ferro Output

The production of ferroalloys in Canada in 1917, chiefly ferrosilicon, but including also spiegeleisen, ferromolybdenum and ferrophoshorus, reached a total of 40,329 tons, valued at $3,471,934, as against a total in 1916 of 28,628 tons, valued at $1,777,615. Exports amount to 33,212 tons valued at $2,616,924, or an average of $78.79 per ton; imports to 12,828 tons, valued at $2,029,990, or an average of $158.25 per ton.

## Lay First Keel

The Newburg Shipyards, Inc., on March 14 laid the keel for a 9000-ton steel freighter for the government at its yard at Newburg, N. Y. This is the first of ten 9000-ton vessels to be built for the government. The plant has four ways. Steel for the ships it is to build is being fabricated by the American Bridge Co. Irving T. Bush is chairman of the Newburg Shipyards, Inc., and T. C. Desmont president.

## Puts Duty on Ore

The Mexican government, according to a dispatch from the American representative in Mexico, has placed an export duty on manganese ore of 3 per cent ad valorem, based on New York prices.

# Canada Plans Plate Mill

### Government Takes Bids on Rolling Plant and Steel For Ships—Tin Plate Arranged For—Rail Tonnage Placed

OTTAWA, March 18.—One of the largest contracts ever awarded by the Canadian government is on the point of being placed in connection with the construction of a rolling mill to produce steel plates for the government's shipbuilding program. It is expected that $60,000,000 will be spent between now and June, 1919, and a large proportion of this sum will go into the necessary steel. The different Canadian steel corporations were asked to submit proposals for the construction of a rolling mill estimated to cost $3,500,000 and to state the price at which plates would be supplied. While the government order will not necessarily be confined to one mill, the impression is that no more than one mill will be erected at present. Propositions have been submitted by the Dominion Steel Corp., Sydney, N. S.; the Nova Scotia Steel & Coal Co., New Glasgow, N. S.; the Hamilton Steel Co., Hamilton, Ont.; the Algoma Steel Co., Sault Ste. Marie, Ont.; and the United States Steel Corp., Ojibway, Ont. The proposals are with the minister of marine, Ottawa, Ont. It is rumored that the Dominion Steel Corp., Sydney, has submitted the lowest figure.

The war trade board of Canada has been successful in making arrangements with the war trade board of the United States, whereby canners in Canada will be enabled to obtain supplies of tin plate from the United States at an approximate price of $7.75 per base box of 100 pounds. An order-in-council has been prepared by which the Canadian government will take power to purchase on behalf of the canners the total supply of tin plate necessary to meet the requirements of the canning industry. The individual canners will through their organizations indicate their requirements to the government, supplemented by the guarantee of a chartered bank, and in due course the government will see that tin plate is shipped to them. It is estimated that through the work of the war trade board a saving of $600,000 a year will be effected for the food canning industry of Canada.

An order for 100,000 tons of 85-pound rails to lay about 800 miles of track has been placed by Hon. J. D. Reid, minister of railways, with the Dominion Iron & Steel Co. The rails are to be manufactured at the company's plant at Sydney, N. S., and all are to be delivered by the end of July. Rolling will begin on April 1, and it is hoped that during April, 10,000 tons will be ready for use in making replacements on Canadian railroads. In May, June and July, it is expected that the rail mill will be producing up to its full capacity and that deliveries will reach 30,000 tons a month. The filling of this order will create a supply large enough to provide for replacements on the Canadian Pacific and Grand Trunk systems. The rails required by the Canadian Pacific and Grand Trunk lines will be supplied by the government at cost, plus transportation charges. The government has made arrangements with the imperial munitions board whereby the Dominion Iron & Steel Co., which has heretofore been turning out munitions steel, will roll rails during the next four months.

The minister of railways also is arranging for new rolling stock and locomotives for Canadian railways. The railway department is ordering 7500 new freight cars, 150 locomotives and several hundred new colonist sleepers as well as other passenger cars. The freight cars will include a large number of coal cars. All the new equipment will be ordered on government account, but deliveries will be allotted to all railways as need requires. Prices submitted in the tenders received are very high compared with pre-war prices. Box cars now cost from $2600 to $2800 each, as compared with $1400 each before the outbreak of war. Locomotives have increased in cost by 150 per cent and now run at about $60,000 each. In an effort to reduce costs through pooling orders by the government, officials of the railway department are investigating costs of raw material and of manufacture, and arrangements may be made with the manufacturers for governmental purchase of iron and steel supplies at minimum cost, through co-operation with the United States government.

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All ships under command of the section commands of the first naval district, Rear Admiral Spencer S. Wood, will be repaired on the Lockwood property, East Boston, Mass. waterfront which the government recently commandeered and which it now is reclaiming. It is said that the consideration was in excess of $100,000. Congestion at the Charlestown navy yard will be relieved by this step.

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## To Resume Development

Approximately 45,000 acres of coal, iron and manganese lands in Bartow and Cherokee counties, Georgia, have been released for development by the Georgia Iron & Coal Co., Atlanta, Ga., as a result of a decision of the New Orleans federal circuit court of appeals. The case decided is that of the Georgia Iron & Coal Co. against the Georgia Steel Co. The referee in bankruptcy for the Georgia Steel Co. decided the Georgia Iron & Coal Co. had no lien on the property. This ruling was reversed by Federal Judge William T. Newman, of Atlanta, and has been sustained by the higher court. Operations will be resumed in all probability on a blast furnace at Rising Fawn, Ga., with a daily capacity of 175 tons, which has been idle during the litigation. Joel Hurt, Atlanta, Ga., who with his associates are interested in the Georgia Iron & Coal Co., has been negotiating with the government for some months concerning the deposits of manganese ore upon the property and the company expects to soon resume mining of manganese.

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## Describes Trench Life

New England foundrymen to the number of 100 or more were addressed by Capt. Leslie N. Vickers, of the British army, at the monthly meeting of the New England Foundrymen's association at the Exchange club, Boston, Wednesday evening, March 13. Capt. Vickers' speech was, "Out of the Trenches", but he covered the whole field of active military operations in an absorbingly interesting fashion. President Aborn of the association presided. The annual report of the association showed cash on hand at the end of the calendar year of $2400, an increase for the year of $600. The membership increased in a year by 30, and stood at 189 members on Dec. 31.

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The Tri-M Machine Co., Wheeling, W. Va., with a site at Warwood, W. Va., has been organized by R. J. McCullagh and others and on Monday, March 11, began the construction of a 40 x 80-foot shop. The plant will be equipped with modern machinery and will handle all kinds of light and heavy work.

# Appliance Show Unaffected by War

## Manufacturers of Railway Equipment Ignore Prevailing Uncertainties in Their Field by Holding Greatest Exhibition in Chicago—Iron and Steel Companies Take Prominent Part in Displays

CHICAGO, March 18.—Although faced by many uncertainties for the future because of government control of railroads, manufacturers of railroad appliances now are presenting in this city one of the most complete and interesting exhibitions that ever has been assembled. The Coliseum and its annex are filled with displays of the devices that make railroads efficient, constituting the annual exhibition of the National Railway Appliances association. This exhibition is being held in connection with the nineteenth annual convention of the National Railway Engineering association which is in session at the Congress hotel. Numerous standard appliances that assist railways to maintain their tracks, to increase the safety of employes and passengers and the general public, and contribute to the general excellence of their physical condition and operation are being shown.

Railroads frequently are referred to as the largest users of steel and iron and products made of these materials. While this statement usually brings up a mental picture of the steel rail and the locomotive as conspicuous examples, the use of steel goes deeply into every portion of railroad use. An inspection of the appliance exhibition indicates that steel and iron make up the major part of almost everything that goes into a railroad's equipment. Although at this time iron and steel producers are driving their plants to capacity to meet the unprecedented demand for material needed in the war, and most of them have nothing to sell, there is no falling off in the exhibits of these companies.

### *Two Classes of Exhibits*

Adopting a rough classification, the exhibits divide themselves into two general classes. Safety and signaling made up of electrical and compressed air devices to protect crossings and also used in the operation of trains, form a large section of the exhibits. Rails and track appliances constitute the other large section. In addition to these classes are many specialties not so easily grouped. Motor cars for use of track inspectors and workers; bridge timber; creosoted, concrete and steel ties; culverts, tanks, wire and cable; special car types and miscellaneous railway equipment exhibits.

The Coliseum is dressed for the occasion in an unusually elaborate way with the national colors and pictures of national leaders. Exhibit spaces are separated by fence sections in gilt and uniform signs mark the various displays.

Some of the exhibits are unusually artistic. The Carnegie Steel Co., always an exhibitor, has built a rustic garden in its space, with hedges, flower pots, ferneries, a fountain and rustic seats in the nooks. The company's products are exhibited in an unobtrusive way on small tables. Rails and track fastenings make up most of the actual exhibit.

The Associated Manufacturers of Malleable Iron have taken larger space than usual. This association is conducting an exhibit calculated to impress observers with the great utility of malleable iron for railroad work where strength and durability are desired. This is an active exhibit and tests of the material are being carried on. A wedge-testing machine, a miniature pile driver and other testing devices demonstrate the punishment that can be administered before fracture of the metal takes place. A twisting machine gives a similar illustration from another angle and a tensile strength machine also is in operation. An interesting detail of this exhibit is a malleable iron truck wheel made for use on the Liberty truck. This has been tested to destruction and showed high resistance. Although the pressure was applied to only a portion of the rim, and that the weakest, the wheel withstood 68 tons and was fractured only when 78 tons had been applied.

The American Steel & Wire Co. presents an interesting exhibit of its varied line of products. Wire in all forms, fencing, reinforcement, nails, building and car hardware make up some of the general classifications. The myriad uses to which wire is applied are well indicated by this exhibit.

The Ayer & Lord Tie Co., manufacturer of creosoted ties and paving blocks, has an attractive exhibit of its products with demonstrations of the utility and lasting qualities of wood so treated, both for track work and floors.

The Lackawanna Steel Co. has confined its exhibit to track fastenings and appliances, though many sections of steel rail also are shown.

The Page Steel & Wire Co. shows two special types of wire, coppered wire, which resists corrosion by virtue of its copper coating, and Armco welding wire. The latter is replacing Swedish iron for use in the welding flame, to build up metal in repairing and welding.

The exhibit of Fairbanks, Morse & Co. covers a wide range. Several types of motor cars for inspection and track work are shown, as well as electric motors, pumping machinery and scales.

The Armco Culvert Manufacturers, an association of manufacturers of a similar product who group themselves for publicity purposes, shows a large line of iron culverts, mostly corrugated metal, various types of highway and danger signs. An interesting collection of specially illuminated pictures of the application in actual practice of the culverts, is presented.

The National Malleable Castings Co. presents a large variety of malleable castings actually in use by railroads. The Chicago Malleable Castings Co., another large manufacturer of this material, also presents a wide variety of railroad appliances.

The Chicago Bridge & Iron Works shows miniatures of its railroad tanks and water storage devices.

The Bethlehem Steel Co. presents steel rails and track accessories, switch stands and numerous other devices for use in connection with the roadbed.

The Cast Iron Pipe association has an exhibit to demonstrate the long life of cast pipe under adverse conditions.

The Ajax Rail Anchor Co. shows a short section of track equipped with its device to prevent creeping of rails and also a testing machine to indicate the pressure that will be withstood by the anchor before it ceases to restrain the rail from moving.

There are numerous exhibits of special frogs, switches, crossings, special car types, grip nuts, rail anchors, rail joints, storage batteries, special wire and cable and general electrical apparatus.

The American Railway Engineering association is holding its nineteenth annual convention at the Congress

hotel, Tuesday to Thursday of this week, with a comprehensive program covering all details of railroad operation and maintenance. The Railway Signal association held its annual meeting in the Auditorium hotel Monday.

Exhibitors at the appliance show are as follows:

Adams & Westlake Co., Chicago.
Adams Motor & Mfg. Co., Chicago.
A. G. A. Railway Light & Signal Co., Elizabeth, N. J.
Ajax Rail Anchor Co., Chicago.
Alexander Crossing Co., Clinton, Ill.
Alexander Milburn Co., The, Baltimore.
Alger Supply Co., Chicago.
Allith Prouty Co., Danville, Ill.
American Hoist & Derrick Co., St. Paul.
American Kron Scale Co., New York.
American Steel & Wire Co., Chicago.
American Vulcanized Fibre Co., Wilmington, Del.
American Valve & Meter Co., Cincinnati.
Anti-Creeper Corp., New York.
Armco Iron Culvert Manufacturers, Middletown, O.
Asbestos Protected Metal Co., Pittsburgh.
Associated Manufacturers of Malleable Iron, Cleveland.
Austin Co., The, Cleveland.
Ayer & Lord Tie Co., Chicago.

Baker, John Jr., Chicago.
Barrett Co., The, Chicago.
Benjamin Electric Mfg. Co., Chicago.
Bethlehem Steel Co., Chicago.
Brach Supply Co., L. S., Newark, N. J.
Boss Nut Co., Chicago.
Bridge & Building Association, Chicago.
Bryant Zinc Co., Chicago.
Buda Co., The, Chicago.

Carbic Mfg. Co., Duluth.
Carnegie Steel Co., Pittsburgh.
Cast Iron Pipe Assn., Chicago.
Chicago Bridge & Iron Works, Chicago.
Chicago Flag & Decorating Co., Chicago.
Chicago Malleable Castings Co., Chicago.
Chicago Pneumatic Tool Co., Chicago.
Chicago Railway Signal & Supply Co., Chicago.
Chipman Chemical Engineering Co., Inc., New York.
Cleveland Tractor Co., Cleveland.
Crerar Adams & Co., Chicago.

D. & A. Post Mold Co., Three Rivers, Mich.
Detroit Graphite Co., Detroit.
Diamond State Fibre Co., Chicago.
Dickinson, Paul, Inc., Chicago.
Dilworth, Porter & Co., Inc., Pittsburgh.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Domestic Engineering Co., The, Dayton, O.
Duff Mfg. Co., Pittsburgh.

Edison, Thos. A., Inc., Bloomfield, N. J.
Edison Storage Battery Co., Orange, N. J.
Electric Railway Improvement Co., Cleveland.
Electric Storage Battery Co., Philadelphia.
Eymon Continuous Crossing Co., Marion, O.

Fairbanks, Morse & Co., Chicago.
Fairmont Gas Engine & Railway Motor Car Co., Fairmont, Minn.
Federal Signal Co., Albany, N. Y.
Frictionless Rail, The, Boston.

General Electric Co., Schenectady, N. Y.
General Railway Signal Co., Rochester, N. Y.
Graver Tank Works, East Chicago, Ind.
Grip Nut Co., Chicago.
Gould Storage Battery Co., Chicago.
Gurley, W. & L. E., Troy, N. Y.

Hatfield Rail Joint Mfg. Co., The, Macon, Ga.
Hall Switch & Signal Co., New York.
Hayes Track Appliance Co., Richmond, Ind.
Hazard Mfg. Co., Chicago.
Hoeschen Mfg. Co., Omaha, Nebr.
Hubbard & Co., Pittsburgh.
Hegeman-Castle Corp., Chicago.

Ingersoll-Rand Co., New York.
International Filter Co., Chicago.
International Steel Tie Co., The, Cleveland.
Iowa Gate Co., Cedar Falls, Iowa.

Johns-Manville, H. W., Chicago.
Jordan Co., O. F., East Chicago, Ind.
Julian Beggs Signal Co., Terre Haute, Ind.

Kalamazoo Railway Supply Co., Kalamazoo, Mich.
Kaustine Co., Buffalo.
Kelly-Derby Co., Inc., Chicago.
Keppler Glass Constructions, Inc., New York.
Kerite Insulated Wire & Cable Co., New York.
Kettle River Co., The, Minneapolis.
Keystone Grinder & Mfg. Co., Pittsburgh.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Lackawanna Steel Co., Lackawanna, N. Y.
Layne & Bowler Co., Memphis, Tenn.
Lehon Co., The, Chicago.
Long, Chas. R., Co., Louisville, Ky.
Lufkin Rule Co., Saginaw, Mich.
Lipman Refrigerator-Car Mfg. Co., Beloit, Wis.
Macomber & Whyte Rope Co., Kenosha, Wis.
MacRae's Blue Book, Chicago.
Madden Co., The, Chicago.
Marsh & Truman Lumber Co., Chicago.
Massey Co., C. F., Chicago.
McGraw-Hill Publishing Co., New York.
Mercury Mfg. Co., Chicago.
Monroe Calculating Machine Co., Chicago.
Mudge & Co., Chicago.
M. W. Supply Co., Philadelphia.
Miller Train Control Corporation, Danville, Ill.

National Carbon Co., Inc., Cleveland.
National Concrete Machinery Co., Madison, Wis.
National Indicator Co., Long Island City, N. Y.
National Lead Co., New York.
National Lock Washer Co., The, Newark, N. J.
National Malleable Castings Co., The, Cleveland.
National Railway Appliances Assn., Chicago.
National Surface Guard Co., Chicago.
Nichols & Bros., Geo. P., Chicago.
Northwestern Motor Co., Eau Claire, Wis.

Ogle Construction Co., Chicago.
Okonite Co., The, New York.
O'Malley Beare Valve Co., Chicago.

P. & M. Co., Chicago.
Page Steel & Wire Co., New York.
Patterson, W. W., Co., Pittsburgh.
Peyton Safety Rail Joint Co., Centralia, Ill.
Pocket List of Railway Officials, New York.
Polk-Genung-Polk Co., Chicago.
Positive Rail Anchor Co., Marion, Ind.
Post, G. A., New York.
Pittsburgh-Des Moines Steel Co., Pittsburgh.
Protective Signal Mfg. Co., Denver, Colo.
Pyrene Mfg. Co., Chicago.

Q. & C. Co., New York.

Rail Joint Co., The, New York.
Safe Lock Switch Machine Co., Lexington, Ky.
Sellers Mfg. Co., Chicago.
Signal Accessories Co., New York.
Silver Steel Tie Co., The, New York.
Simmons-Boardman Publishing Co., New York.
Simple Gas Engine Co., Menasha, Wis.
Snow Construction Co., T. W., Chicago.
Southern Pine Ann., New Orleans.
Squire-Cogswell Co., Chicago.
Standard Asphalt & Refining Co., Chicago.
Swain Co., Chicago.

Templeton Kenly & Co., Ltd., Chicago.
Toledo Scale Co., Toledo, O.
Track Specialties Co., New York.
Tyler Underground Heating System, Pittsburgh.

Union Switch & Signal Co., The, Swissvale, Pennsylvania.
U. S. Wind Engine & Pump Co., Batavia, Ill.

Verona Tool Works, Pittsburgh.
Volkardt Co., Inc., Stapleton, N. Y.

Walls Frogless Switch & Mfg. Co., The, Kansas City, Mo.
Waterbury Battery Co., Waterbury, Conn.
Wayne Oil Tank & Pump Co., Fort Wayne, Ind.
West Coast Lumbermen's Assn., Seattle.
Western Electric Co., Inc., New York.
Wyoming Shovel Works, The, Wyoming, Pa.

Yale & Towne Mfg. Co., New York.

## Metal Trades Re-elect

Former officers were re-elected by the Chicago branch of the National Metal Trades association at its twentieth annual meeting at the Mid-day club, March 14. O. A. Olson was continued as president, G. A. Roth vice president and William Ganschow treasurer. Paul Blatchford, secretary for many years, was elected to the same position and Walter du Verdie was continued as manager of the employment bureau. An address on the war was made by S. J. Duncan-Clark, war analyst for the *Chicago Evening Post*. A campaign was started to forward the candidacy of John W. O'Leary of Chicago for president of the National Metal Trades association at the forthcoming annual meeting in New York.

## Completing Tin Mill

Officials of the Hudson Sheet & Tin Plate Co., Inc., New York, expect to have their new plant at Marietta, O., in operation by May 20. The plant is now in the course of construction and when completed will consist of four hot mills, two stands of cold rolls, five complete tinning machines, and one 3-arm pickling machine. The latter will be furnished by the Mesta Machine Co., Pittsburgh. The mills are being built by the Aetna Foundry & Machine Co., Warren, O. Officials of the company expect to enlarge the mill next July.

# Metal Trades Hard Hit By Strikes

## Survey Just Completed Reveals Difficulties Attending Operation During Six Months After America's Entry Into War—Union Labor Most Involved—6,285,519 Workdays Lost in 1156 Strikes

A RECENT survey of strikes in wartime by the national industrial conference board, shows that in the first six months of America's participation in the war, approximately 3000 labor disturbances of this kind occurred in industrial establishments throughout the country. To 2521 concerns thus affected a questionnaire was sent and data were secured from 1156. It was developed that in these plants, representing less than half the number 283,402 employes were made idle and the number of days of production lost was 6,285,519, or 22.22 days per worker. The report points out that it would require the labor of 251,400 persons for a whole month to make up for the reported loss of production. A manufacturing plant employing 1000 workmen would have to operate 300 days a year for 21 years to offset the time thus lost.

*Metal Trades Most Affected*

The metal trades head the list of industries disturbed by strikes with 374 establishments affected. Employes made idle numbered 78,727 while the number of workdays lost approximated 1,230,804. The shipbuilding industry comes next with 75 strikes, 47,174 workmen affected with 1,072,501 workdays lost. Coal and copper mining are third and fourth. These four industries contributed 46.1 per cent of the strikes, 61.7 per cent of the workers made idle and 66.3 per cent of the workdays lost. First on the list of demands made by strikers is increased wages. Of the total 1156 establishments affected, in 445 the strikes were for that reason. Employes thus made idle totaled 84,931, which meant the loss of 1,208,658 workdays. In 230 strikes, the demand was for closed shop and higher wages. Here 67,358 employes were made idle and 1,397,701 workdays were lost.

*Summary of Settlements*

The report states that the largest number of strikes, 552, or 45.2 per cent, were settled by private conferences, in 42.7 per cent of which cases the demands of the strikers were granted, in 30.3 per cent compromised and in only 27.0 per cent refused. Days lost numbered 1,360,757. In 371 cases, however, federal or state mediation became necessary and here 3,717,918 workdays were lost. Because other employes were hired in the case of 113 other strikes, only 352,686 days were lost.

In its summary, the national industrial conference board states that nearly three-fifths of the disputes occurred in establishments where the majority of the strikers were members of trade unions, and the percentage of time lost was the highest in connection with these strikes.

The advisory committee of the national industrial conference board consists of the following: L. A. Osborne, chairman, vice president, Westinghouse Electric & Mfg. Co., Pittsburgh; W. H. Barr, president Lumen Bearing Co., Buffalo; W. H. Van Dervoort, president, Root & Van Dervoort Engine Co., East Moline, Ill.; C. A. Crocker, president, Crocker-McElwain Co., Holyoke, Mass.; E. A. Smythe, president, Pelzer Mfg. Co., Greenville, S. C. The committee represents 16 national associations with over 18,000 manufacturers of all kinds as members. Among the organizations represented are the National Association of Manufacturers, National Council for Industrial Defense, National Erectors' association, National Founders' association, National Metal Trades association, etc.

## Gompers Defends Policy

In an address at a meeting called by the National Civic Federation, held in New York City recently to discuss after-war problems, President Samuel Gompers, of the American Federation of Labor, vigorously defended organized labor's war policy.

Asserting that the Bolsheviki and other radical elements have been and are trying to misrepresent American organized labor, Mr. Gompers said:

"There are conditions of industrial politics and law altogether different in the United States than in any other country. There is something about the labor movement in America of which you may be assured—it must be altogether American.

"Further, the labor movement of America will not be represented at any conference in any country where the representatives of an enemy nation are present.

"I'm not going to give up the American labor movement with its great achievements of today to look for the chimerical, fantastical Bolshevik promises of tomorrow."

## Labor Costs Jump

Mounting cost of labor is graphically shown by the recently published annual report of the Republic Iron & Steel Co., This revealed that whereas in 1915, the average wage of employes was $771. in 1917, it rose to $1211, an increase of $440 or 57 per cent. This is practically covered in the five so-called 10 per cent wage advances given iron and steel workers generally during 1916 and 1917, and is typical of what has taken place throughout the country. The actual cash outlay is but a part of the higher cost, however, it is pointed out, since it is the concensus of opinion in the Mahoning valley district that it now takes three men to do what two men did before the war. Some manufacturers even state that now it takes two men to perform the work one did two or three years ago.

## Promotes Painstaking Work in Plant

To instill a spirit of carefulness in its employes as well as to stimulate production, the Westinghouse Electric & Mfg. Co., Pittsburgh, has issued a number of illustrated posters, 18 x 21 inches, printed in red, white and blue. One of these shows an actual view of a shattered gun on a French battlefield, the disastrous result of a premature explosion of a defective shell. It bears the following statement: "A defective shell wrecked this 4.5-inch howitzer, imagine the gun crew's fate. The Huns could do no worse. Make perfect shells and lessen the perils of our boys at the front." Another shows an interior view of the Westinghouse munition plant and beneath it is printed the following: "Back up the boys at the front. They need all the shells you can make and need them quick. Don't forget the more shells you can make, the sooner the boys can come home. Remember good shell makers in this shop are as necessary as soldiers in the trenches." Already the psychological effect upon the workers has been noted and great care is being exercised in their work.

# Ford Tractors

**Soon to be on Open Market—Reduced to War Boards**

Detroit, March 18.—The Ford tractor, now being manufactured in volume by Henry Ford & Son at Dearborn, a suburb of Detroit, will be placed on the American market May 1, it is officially announced. The company now is completing the delivery of tractors to England and Canada and has been turning out 80 a day. Ernest Kanzler, production manager, has announced that 1000 tractors will be sold to the Michigan war preparedness board at a price of $750 each. They are being sold only to governments and states at a small margin of profit.

C. H. Wills, mechanical superintendent of the Ford Motor Co., has perfected a new 18-cylinder liberty motor which produced more than 75 horsepower. The motor is lighter than any previous model of its kind and operates with less vibration.

Essex Motor Co. has leased its plant at 452 Franklin street to the Commercial Motor Body Corp. of New York for three years. The Essex Motor Co., a subsidiary of the Hudson Motor Co., will begin the manufacture of a low-priced car within a few months.

The American Steel & Wire Co. has let contracts for the erection of a one-story brick and steel warehouse.

The National Twist Drill & Tool Co. is having plans prepared for the erection of a four-story brick, steel and reinforced concrete addition.

The Buhl Malleable Co. plans erection of an addition to its core shop.

The Paige-Detroit Motor Car Co., which has taken a large volume of government truck work, proposes to purchase the business and assets of the Signal Motor Truck Co.

Plans are being discussed for refinancing the Regal Motor Co. with a view of resuming production on a large scale. The Security Trust Co. now is receiver.

Commerce Motor Car Co., George Kellogg, secretary, has booked a $2,000,000 contract for trucks with the war department. The company is issuing $100,000 of treasury stock to expand its plant.

## Tool Steel in Demand

Tool steel inquiries, directly or indirectly related to government business flood the northern Ohio market, and makers declare their chief difficulty is in making deliveries. The mills still have to contend with railroad embargoes. Stocks are piling up at the mills and a continuance of better weather conditions will likely solve the problem. An inquiry is current for a large tonnage for a Marion, O., tractor manufacturer, whose output in 1918 will possibly be 5000 tractors. While an increased amount of tool steel is being used in the manufacture of trucks and tractors, this represents largely diverted tonnage. Some makers are turning down inquiries from airplane manufacturers, because of the specifications for tool steel used in airplanes, while others have fitted themselves to take care of this business.

# Obituaries

JOSEPH KINTER SMITH, vice president of the Pittsburgh Piping & Equipment Co., Pittsburgh, died recently while returning from Palm Beach, Fla., where he had gone to recuperate, having been in ill health for some time. At St Augustine he stopped off to spend a few days. His condition became critical and he was taken to the East Coast hospital, where an operation failed to save his life. Mr. Smith was born in Brookville, Pa., and located in Pittsburgh when a youth. For many years he was associated with the Best & Co., manufacturers of piping work, and 15 years ago he aided in the organization of the Pittsburgh Piping & Equipment Co., of which George H. Danner is president.

JOSEPH KINTER SMITH

Elisha Judd Steele, who since 1875 has been identified with the Coe Brass Co., now a part of the American Brass Co., Torrington, Conn., died recently at his home in Torrington, aged 75. When the merger was effected, he was made superintendent of the Coe branch. Later he held successively the positions of assistant secretary, secretary and treasurer and in 1913 was made vice president in which capacity he served until he retired in October, 1916.

Fred G. Clark, who for over 30 years has been identified with the foundry business in Bangor, Me., died at his home in that city, recently, aged 57.

Henry S. Cole, Pawtucket, R. I., aged 80, died at his home in that city recently. He was engaged in the manufacture of steam fire engines and cotton machinery under the firm name of Cole Bros., for many years.

Frank J. Hurley, New York, traveling representative of the Independent Pneumatic Tool Co., Chicago, died at his parents' home in East Orange, N. J., after a lengthy illness of Hodgkins disease, aged 29.

Nathan H. Reed, founder of the Somerville Iron Foundry Corp., Somerville, Mass., died recently in Winchester, Mass. He was born in Bedford, Mass., May 28, 1848, and located in Somerville when a young man.

Mahon H. Hoagland, aged 47, head of Hoagland & Son, Rockaway, N. J., steel manufacturers, died at his home in that city recently from the effects of pneumonia. Mr. Hoagland was fuel administrator for Morris county, New Jersey.

Isaac Stephenson, former senator from Wisconsin, who in 1911 organized the Stephenson Charcoal Iron Co., Marquette, Mich., died at his home in Marinette, Wis., March 15, aged 88. He owned vast mineral and lumber lands in northern Michigan and Wisconsin, and a part interest in the 80-ton blast furnace of the Stephenson company at Wells, Mich. The Stephenson mine at Gwinn, Mich., is now being worked by the Cleveland-Cliffs Iron Co., Cleveland.

# Sulphate Orders

**For High Explosives Distributed by Government—Toluol Being Taken**

New York, March 16.—Orders for several hundred tons of sulphate of ammonia for use in the manufacture of high explosives again were distributed by the government this week. With the exception of this business, activity in this product was light. Spot carloads, however, are going at higher prices. The market now may be quoted at $5.40 to $5.50 per 100 pounds at tidewater. Large sales of benzol have been made and the total business placed during the past week was considerably in excess of that for any similar period recently. The greater portion of this business involved spot shipment. Despite these large sales, stocks of benzol continue large and the undertone is far from strong. The market continues at 35 to 40 cents per gallon, although this level could be shaded materially on important quantities.

The committee in charge of C. A. Moorhead, recently appointed by the war industries board to supervise the distribution of toluol, has made considerable progress in co-ordinating the requirements of the various departments of the government. So far, no toluol for ordinary commercial use has been released, but it is expected that at least small quantities will begin to be available soon to consumers for essential requirements. Large additional quantities of toluol were requisitioned by the government during the past week. The government continues to pay $1.50 per gallon at producer's plants for this.

Demand for solvent naphtha which has reflected a consistent expansion of late, continues to grow, with the result that stocks are shrinking. This is particularly true in view of the fact that production of late has been slightly reduced. Solvent naphtha continues to be quoted at 18 to 22 cents per gallon. The market on naphthalin continues exceedingly strong, and is quoted at 10 to 12 cents per pound. This quotation is almost entirely nominal, however, as there is practically no business. Producers now have more business on their books than they can take care of.

## Charter is Obtained

The Suwanee Iron Co., of Kentucky, has filed a charter of incorporation with the secretary of state at Nashville. The capital is placed at $500,000 and the purposes of the corporation are to construct or purchase iron furnaces, the manufacture of iron, charcoal and by-products from wood. J. M. Overton is president and the directors are J. M. Overton, C. Cooper and D. I. Miller. The stockholders are J. M. Overton, Nashville; J. M. Dickinson, Chicago; W. E. Clow, Chicago; J. P. Williams, Nashville; D. I. Miller, Grand Rivers, Ky.; and Lizzie O. Ewing, May Overton, H. C. Irwin and W. D. Hardeman, of Nashville. The principal headquarters are at Grand Rivers, Ky.

## Hoist Manufacturers Will Co-ordinate Aims

With a view to co-ordinating the total experience in electric hoist design a number of the leading manufacturers have arranged the Electrical Hoist Manufacturers' association. The following companies are represented in this organization: The Brown Hoisting Machinery Co., Cleveland; Detroit Hoist & Machine Co., Detroit; Euclid Crane & Hoist Co., Euclid, O.; the Franklin-Moore Co.; Link Belt Co.; Roeper Crane & Hoist Co., Reading, Pa.; Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; Sprague Electric Works, New York; the Yale & Towne Mfg. Co.,

The association holds monthly meetings to study the needs of hoist users and to develop standardized methods of presenting information to the purchaser of hoisting machinery

The membership is confined to manufacturers of monorail electric hoists. The officers at the present time are: F. A. Hatch, chairman, Shepard Electric Crane & Hoist Co.; F. W. Hall, vice chairman, Sprague Electric Works; and C. W. Beaver, secretary-treasurer, the Yale & Towne Mfg. Co.

## Coke Oven By-Products

**Spot**

Per Gallon at Producers Plant

| | |
|---|---|
| Pure benzol | $0.35 to .40 |
| Toluol | (nominal) |
| Solvent naphtha | .18 to .22 |

Per Pound at Producers Plant

| | |
|---|---|
| Phenol | $0.52 to .55 |

Per 100 Pounds at Seaboard

| | |
|---|---|
| Sulhate of ammonia (nominal) | $5.40 to 5.50 |

**Contract**

Per Gallon at Producers Plant

| | |
|---|---|
| Pure benzol | $0.35 to .40 |
| Toluol | nominal |
| Solvent naphtha | .18 to .22 |

Per Pound at Producers Plant

Phenol nominal.

Per 100 Pounds at Seaboard

Sulphate of ammonia.....nominal

# Russian Rails

**Rolled in This Country Bought by Canada Replace Heavier Sections**

Toronto, March 18.—Hon. J. D. Reid, Canadian minister of railways, practically has completed arrangements for securing the rails needed for track renewals on the government railways and the Canadian Northern railway system. The purchase of 355 miles of 67-pound rails, rolled in the United States under orders placed by the Russian purchasing commission, has been completed and some of the steel now is on its way to Canada. Negotiations for an additional 150 miles of rails also manufactured for Russia have nearly been concluded. It is also proposed to take up some 350 miles of 80-pound rails on the Hudson Bay railway and obtain about 100 miles from yards and sidings on the National Transcontinental, and 120 or 130 miles more of heavy sections from the St. John Valley railway in New Brunswick, owned by the government of that province. These 80-pound rails will be used in replacing worn rails on the government and Canadian Northern systems where the traffic is heavy. A certain portion of the rails replaced can be straightened and shortened for use in renewals. The light Russian rails will be used for replacing the 80-pound rails on the Hudson Bay and other roads, where the traffic is lighter and less frequent than on the railways requiring new rails.

The Canada Blower & Forge Co., of Kitchener, Ont., has been closed down by order of the imperial munitions board at the instigation of the inspections branch. The reason assigned is that certain of the shells turned out were useless for purposes of warfare.

## Building Ore Barges

In order to carry iron ore through the New York state barge canal from the Lake Champlain district to the New York harbor points, the Ore Carrying Corp., a subsidiary of Witherbee, Sherman & Co., is building a new barge fleet. One of the new barges was launched March 16 from the yard of John B. Heaney, South Brooklyn. The most important unit of the fleet will be a 152-foot steamer for towing the barges. This steamer also will have capacity for carrying 800 tons of cargo. It is to be launched next week from the yard of Ira S. Bushey & Sons, Brooklyn. Other launchings will take place as fast as the rest are completed.

## Germany to Get Manganese from Ukraine Mines

Germany now has access to large deposits of high grade manganese ore, according to F. A. Ray, professor of mining engineering, Ohio State university, in relating his experiences in Russia to the Cleveland Engineering society on March 5. He characterized the release of the manganese and wheat of Ukraine as the greatest blow which the allies have suffered. He stated that the only comforting feature is the complete demoralization of the Russian mining and transportation systems, which may delay Germany in obtaining manganese from the large Ukraine deposits. The latter lie about 400 miles from the German border.

Professor Ray described the coal deposits of Russia from first hand knowledge obtained as a member of the commission sent from this country to investigate the mineral resources of the three great divisions of Russia and of Siberia. The most valuable coal from a metallurgical viewpoint occurs near the hematite beds of Ukraine and in the neighborhood of the Nicopol manganese deposits. There are 16 steel plants in this region, which supplied a quantity of structural steel for bridge work and industrial uses previous to the war. Professor Ray described and showed photographs of one bridge across the Volga which had 14 steel truss spans, all constructed complete in this steel region.

Previous to the war Germany received some manganese from the Nicopol region, and a certain quantity of the coal which is of coking quality. Since the dissolution of Russia and the peace agreement with Ukraine, Germany will control the railroads of this region and undoubtedly will make use of the manganese.

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The Optenberg Iron Works, Sheboygan, Wis., manufacturer of boilers, tanks, stacks, machine tools, etc., is working on a large contract for drills to be used in France. The plant specializes in radial drills.

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The Greenfield Tap & Die Corp., Greenfield, Mass., recently opened its new administration building on Sanderson street, Greenfield, Mass., and on Tuesday, March 5, held open house. In this building, the administration work of the corporation's widely scattered plants is co-ordinated.

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The name of the Midland Machine Co., Detroit, manufacturer of molding machines and foundry equipment, has been changed to the Grimes Molding Machine Co., to more closely identify this concern with the name of the machine which it builds. Manufacturing operations now are being carried on in a new plant recently completed that provides double the facilities of the former works and the output will be increased threefold.

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## Takes Ship Contract

The Alliance Shipbuilding Corp. has been newly organized and has established headquarters in the Woolworth building, New York. The yard will be at Nyack, N. Y. It has taken a contract for one 4000-ton steel vessel for the government.

## Iron Works Leased

A lease has been signed by the Puget Sound Machinery Depot of Seattle and the National Iron Works, Spokane, whereby the former company takes over the plant of the latter for use in connection with filling important war contracts. The lease runs for three years with option on a two years' extension. The Puget Sound Machinery Depot which is also constructing a large plant at Seattle will make engines and auxiliary machinery for the ships now building on Puget sound. Some additional equipment will be installed in the Spokane plant.

# A Word With the Editor

### Appreciation of Mr. Yeatman

To the Editor:—

I have just read the interesting note in your issue of Feb. 28, regarding Pope Yeatman, under the heading "Men of the Iron Trade". You mention some things but omit others of equal or greater importance. You say truly that "Mr. Yeatman is regarded as one of the highest authorities in the world on mining affairs and properties." During his long connection with the Guggenheim interests, it was commonly said that he was "the most highly paid expert in the world, receiving $125,000 a year salary." I cannot vouch for this, but I can say from my own personal knowledge and experience, that he is, without exception, the most modest and retiring great man that it has ever been my good fortune to know. Not only the south, but the whole country, may well be proud of the patriotism of such a man as Pope Yeatman, when we learn that, in sharp contrast to the sinister reports of "graft" in some lines of government contracts, Mr. Yeatman has closed up all his offices and moved to Washington to serve his country, devoting his entire time and talents for the period of the war in consideration of $1 a year! Such a record is an inspiration to us all.

Yours truly,
ALEX. E. OUTERBRIDGE.

Philadelphia.

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### Lake District Ship Inspection

To THE EDITOR:—

My attention has been drawn to an editorial in your issue of March 7, criticising inspection methods of the United States Shipping Board Emergency Fleet Corp., in which the following quotation occurs:

"The Emergency Fleet corporation has placed orders for a great many marine engines and is pressing for deliveries. Yet there is at least one foundry in the state of Ohio where there are several large cylinder castings out in the yard waiting for the skull-cracker ball that would now be in the machine shop were it not for petty exactions of certain subordinate inspectors. The cumulative effect of this maladministration of our inspection service is delayed production and shortage of important materials."

For your information and the information of your readers, you are advised that no such condition exists in this district, which comprises the entire Great Lakes, so far as this office is aware. There are no engines under construction for any ship within the jurisdiction of this office to which the conditions referred to in your editorial apply.

Since the organization of this district, this office has found it necessary to condemn only two cylinder castings out of several hundred and you are requested to make this correction in justice not only to the Emergency Fleet corporation but to the engine builders concerned.

Very truly yours,
H. PENTON,
District Officer.

Cleveland, March 8, 1918.

The cylinders referred to while in the state of Ohio, and personally inspected by a member of the staff of THE IRON TRADE REVIEW, were not located in the Great Lakes district and were inspected by a branch of the Emergency Fleet corporation not connected with the Great Lakes district.—THE EDITOR.

# Unfold Huge War Building Program

## Ordnance and Munition Plant Construction for War Department Will Entail Outlay of Tremendous Sum—Steel Requirements Will be Large—Cost Plus Contract Method Will be Followed in Work

WASHINGTON, March 19.—The war department's proposed program of ordnance and munitions plant construction looms as the factor likely to offset the tremendous drop in new private work and as another source from which heavy demands will be made upon the iron and steel and other branches of business serving the building industry. The army is going into extensive construction of warehouses, storage depots and factories, both in this country and abroad. This type of construction will require more steel tonnages than did the early program of only the building of cantonments. It has been estimated the proposed building schedule will run into the expenditure of more than $300,000,000 which will make the entire program, completed and proposed, aggregate far above $500,000,000.

Announcement here that the energies of contractors would be turned into government instead of private channels was made with the statement by Maj. W. A. Starrett, chief of the emergency construction division of the war department, himself one of the leading builders, that the cost-plus contract system, used in the awarding of the early contracts, will be followed. This statement indicates the army's decision to continue along present lines despite the criticism which has been expressed in many quarters. The army feels the present 3 or 4 per cent net earned by contractors under the plan is ample profit, but places a limit of $250,000 on any contract.

### *To Build Many Warehouses*

Major Starrett has said that 31 storage warehouses will be built along the Atlantic coast and in the central part of the United States, an undertaking for which the army has made an outlay of $100,000,000. Some of the completed warehouse layouts are expected to cost as much as $15,000,000 each. Another $100,000,000 will go into power, gas, nitrate and other war material factories. The remainder will be required for flying field buildings, quartermasters, ordnance and other bureau construction.

Concerning the percentage contracts, Major Starrett said:

"The percentage contract has been a success, because in its details it was well conceived; because it gave the contractor a fair, but only a fair profit; because it obtained for the government at a minimum cost a service that the contractor was able to render and which the government was in no position to render itself. It was fair, and the government got value received.

"And since the cantonments, other government programs have come up, but they have all had the same characteristics. They had to be started before they were worked out in detail, and in each case the system of sending the government and the contractor into the field together, there to work out the problem in which they are joined in a common interest, has worked out successfully.

"The question has often been asked whether the compensation is not high. The answer is that it is much lower than the average peace time compensation for similar service. The contract, as it is now in force, pays 7 per cent for small operations (under $100,000) scaling down to 2½ per cent on very large ones with only 2½ per cent allowed on subcontracts, and the limit of fee on any one contract, however large, of $250,000. Out of this fee the contractor has to pay his own overhead costs, and, therefore, the fee is not all profit by any means. At the present time the contractor is averaging between 3 per cent and 4 per cent profit.

"Several of the contractors that built cantonments have asserted that their overhead ran as high as $100,000. This would leave $150,000 seeming profit. But then there is the corporation income tax. To a going concern with a reasonably profitable general business at least 60 per cent of that profit must be returned to the government in taxes. That would leave $60,000 as net gain. If any considerable part of that goes to the income account of any one stockholder the government again gets 30 per cent personal income tax. The profit commences to look small. Can anyone say that the use to the government of a great going business organization that costs anywhere from $100,000 to $300,000 a year to run is not worth the modest net amount that is here indicated on an operation where skill, experience, teamwork and business ability in large affairs can easily be made to count for literally hundreds of thouands of dollars of saving?"

The production division of the ordnance bureau is working out plans for the division of manufacturers into districts and a closer contact with these districts. Col. Guy H. Tripp, New York, formerly chairman of the Westinghouse Electric & Mfg. Co., now chief of the production division of the ordnance bureau, is working out the details of the plan for a decentralization and closer contact with the manufacturing district. The different munition zones will have headquarters at Pittsburgh, Cleveland, Rochester, Boston, New Haven, Detroit, Cincinnati, Chicago, New York and Philadelphia. In the Chicago district, William Butterworth, president of Deere & Co., Moline, and president of the Illinois Manufacturers' association, has become associated with E. A. Russell, vice president of the Otis Elevator Co., who has been made civilian chief of that district. The Illinois Manufacturers' association also is establishing a bureau at Washington to co-operate closer with the ordnance department.

### *Boston Gets Huge Export Base*

By a recent sale of South Boston water front land and flats to the government for approximately $1,330,000, Boston is destined to become the nation's greatest embarkation port. Chairman John N. Cole of the state waterways commission told the legislative committee on metropolitan affairs that he had received a letter from General Goethals consummating the deal. Construction of the greatest army export base in the world, at an estimated cost of $20,000,000, will be carried out under the direction of the cantonment division of the war department, which is directly responsible to Assistant Secretary of War Crowell.

Plans drawn by Boston architects for a mammoth storehouse of reinforced concrete nearly half a mile long and eight stories in height with a paralleling two-story steel pier shed of about the same length and a pier 2700 feet long, call for an expenditure of about $16,000,000. Equipment will cost between $3,000,000 and $5,-

000,000 additional. These plans have been submitted to the war department for approval. The contract for the construction of the base has been placed with William F. Kearns & Co., of Boston.

## Foreign Business Branches Must Get License

Washington, March 19.—Branches of United States corporations and other American houses in neutral or allied countries must now obtain an enemy trade license from the war trade board before performing contracts involving trading with an enemy or an enemy's ally. Two exceptions to this rule prevail; foreign branches of American firms may deal in enemy commercial paper when refusal might result in failure to collect the debt, or will be a violation of local law, and branches of American banks are authorized to receive enemy paper for collection and to participate in clearing house transactions in the ordinary course of business, notwithstanding enemy membership in the clearing house involved. Foreign branches may also pay or receive rent under existing leases to or from enemies or enemies' allies.

The order which is rescinded by this latest determination of the war trade board was announced Jan. 4, 1918, as follows:

"The war trade board has authorized branches of American corporations and other American houses established and engaged in business in neutral countries and in countries associated with the United States in the war to accept and pay drafts, to deliver goods, warehoused or otherwise stored, and to perform other similar acts, nothwithstanding such acts may involve trading with 'enemies' or 'allies of enemies', when such acts are necessary to prevent a breach or violation of a law or commercial obligation enforcible in the courts of the country in which such branch is established; provided, however, (1) that nothing herein contained shall be held or construed to authorize said corporations, houses or their branches to hereafter undertake or enter into contracts or business or commercial transactions which will involve trading with 'enemies' or 'allies of enemies' in order to carry out or perform the same; and (2) that every case involving transactions of trading with the 'enemy' or 'enemy allies' be reported to the war trade board within thirty (30) days after the occurrence thereof, upon a form to be furnished by the war trade board."

## Commodity Freight Rates Get General Increase

Washington, March 19.—The interstate commerce commission has granted a general increase of about 15 per cent in commodity rates to railroads east of the Mississippi and north of the Ohio and Potomac rivers. This supplements a similar increase allowed in June, 1917, in class rates. These new rates will go into effect within a few weeks with the filing of new tariffs by the railroads. The order applies only to large quantity shipments of coal, brick, grain, foodstuffs, oil, stone, cement, lumber and other staple products shipped under the "commodity" classification. While it is estimated that this ruling will add about $58,000,000 to eastern railroad revenues, it will not increase their earnings, since that amount will revert to the government. With the raise in commodity rates, existing differentials or relationships between cities or districts are to be preserved.

Other cases considered and acted upon by the commission are anthracite coal, increased 15 cents a ton maximum; brick, clay and related articles, increased 15 per cent, from Canton, O., vicinity to Ohio, Indiana and Illinois; rates from other producing centers in western Pennsylvania, West Virginia, other parts of Ohio and northern Kentucky, to be figured on existing differentials from the Canton basis; cement, lumber and forest products, increased 1 cent per 100 pounds regardless of distance.

## Striving to Speed Up Wooden Shipbuilding

Washington, March 19.—Systematic effort to speed up wooden ship construction is being made by James O. Heyworth, manager of the wooden ship construction division of the Emergency Fleet corporation. In his letter to builders of this class, Mr. Heyworth says:

"From personal inspection of yards and reports of traveling engineers, it is evident that construction methods, elasticity of plants and equipment and storage equipment and facilities are widely divergent. While some yards work 400 men per ship, others are able to work only 160, when the peak of construction of the ship is ready for them. While in some yards an old shipbuilder was doubtful whether he dared saw to exact size and left sometimes 3 inches to be later reduced, experience shows that in the Ferris standard type, the plans are so accurate that much woodwork can be safely done by sawing to exact dimensions.

"Shipbuilders in each district should form an association to hold meetings every two weeks for the purpose of showing by photographs, drawings or papers the best practice obtaining elsewhere. Minutes should be properly prepared and distributed among the district's shipbuilders. This is no time to work on the old basis for wooden ship construction. The country needs ships more than anything else. Real co-operation between district shipbuilders worked out in a proper manner can double our production in the next six months."

## Industries Protest Lump War Tax Payments

Washington, March 19.—Concern felt by iron and steel producers and by other large iron and steel business men if the government shall enforce the letter of the law enforcing the payment of excess profits taxes before June 15 is expressed in a letter addressed by President James A. Campbell of the Youngstown Sheet & Tube Co. to Senator Pomerene and laid by the latter before Secretary McAdoo. Mr. Campbell said that his company had invested between $16,000,000 and $18,000,000 in government bonds and certificates and would be unable to take any of the new Liberty loan if the payment of excess profits taxes by June 15 was enforced. Other protests against this provision have been coming to Washington from business men and bankers in all sections. It is pointed out it will be practically impossible for banking accommodations to be provided to all classes of business in order to permit the tax payment to be made simultaneously and in a lump amount; furthermore, the strain upon liquid financial resources will be dangerous.

In view of the situation, Representative McFadden has introduced a bill in the house providing that the excess profits taxes may be paid in four equal partial payments at the option of the tax payer under regulations to be provided by the commissioner of internal revenue. These dates would be June 15, Aug. 15, Oct. 15 and Dec. 15. Taxes for succeeding years are to be paid in a similar manner.

## Export License is Needed to Get Rail Freight

Washington, March 19.—Furnishing of equipment for export shipments by railroads has been made contingent upon the issuance of a license by the war trade board; the presentation of the license number; a proper marking of the bill of lading to show that the shipment is for export; and the bill of lading bearing the license number. The meeting of these requirements has been made antecedent to the supplying of the railroad freight room, by a circular issued to all the railroads by the division of

transportation of the United States railroad administration. This action has been taken in order to insure co-ordination of the railroad operations with the recent proclamation of the President, that all exports must be licensed by the war trade board.

## Fuel Administrator Plans More Prosecutions

Washington, March 19.—While extreme leniency has characterized the fuel administration's attitude toward violators of its orders, according to H. D. Nims, legal director and assistant to Dr. Garfield, in the future the power of the Lever act will be made to operate upon any and all offenders. To date, 424 complaints have been filed, but criminal prosecutions have been instituted in but 83 cases to date and most of these are against the "little fellows". With this legal machinery in operation the filing of many more complaints is anticipated.

# Capital Odds and Ends

WASHINGTON, March 19.—The following figures have been received from the signal corps, aviation section, of the materials necessary for a single airplane of simple type, exclusive of all materials for the engine: Nails, 4326; screws, 3377; steel stampings, 921; forgings, 798; turnbuckles, 276; veneer, 57 square feet; wire, 3262 feet; varnish, 11 gallons; dope, 59 gallons; aluminum, 65 pounds; rubber, 34 feet; linen, 201 square yards; spruce, 244 feet; pine, 58 feet; ash, 31 feet; hickory, 1½ feet.

* * *

The house naval affairs committee has increased an item of $94,000,000 for naval aviation to $188,000,000 and provided for an increase in the number of marine corps officers.

* * *

The Delaware & Hudson railroad has applied for increases ranging from 1.9 cents to 2.3 cents per 100 pounds in the commodity carload rates on machinery, electrical appliances and electrical supplies Schenectady to New York.

* * *

The 20,000 binoculars, spy glasses, telescopes, sextants and chronometers received by the navy department have not met the demand. "Keep them coming," Assistant Secretary Roosevelt says.

* * *

By the increase of the parcels post maximum weight to 70 pounds for first, second and third zones and to 50 pounds for others, new facilities will be opened for transportation of hardware and tools.

* * *

The Los Angeles & Salt Lake railroad desire elimination of routing via the Colorado Midland railroad in connection with the rates on ore and concentrates from points on its line to Blende, Colo.

* * *

An agreement has been concluded between the war trade board and representatives of the Spanish government that minerals, including iron pyrites, are to be exported without restriction from Spain. Assurance is given Spain that the United States will supply her with cotton, petroleum, etc.

* * *

By increasing the $50,000,000 munitions plant housing bill to $60,000,000 and inserting a clause, the house committee has made provision for erecting buildings in Washington to house the great influx of government clerks.

* * *

The Pennsylvania railroad asks for cancellation of the switching rate per car on iron ore from stock pile and thawing plant to unloading point or from stock pile to thawing plant at certain points in Ohio, Pennsylvania and West Virginia.

* * *

The shipping board has issued a booklet giving practical suggestions for traversing the war zone. The regulations cover the berthing of passengers, plugging shell holes, fastening bulkheads, tunnels, doors and other vital parts.

* * *

Since the maintenance of the nation's gold output has such an important bearing on finance, there will be no curtailment of gold mining activities in the effort to curtail nonessential output to release fuel, materials and labor for important uses.

* * *

After President Wilson signs the railroad bill, one of the first acts of the railroad administration will involve the expenditure of approximately $100,000,000 for about 2700 locomotives and 45,000 freight cars, distributed among American builders.

* * *

The food administration is delighted with Ohio's action in placing $1,000,000 in banks to loan to farmers for farm tractors and the opening of a tractor school at Columbus. It is hoped other states will encourage greater use of tractors to aid farm production and offset losses in the labor supply.

* * *

A strike of rivet headers at Lorain, O., was averted recently by intervention of the department of labor, and pending a ratification of an agreement, 500 men employed in the Elyria, O., plant of the Willys-Overland Co. agreed to return to work March 11.

## Starts Ferro Plant

The Seattle Smelting Co., Inc., Seattle, Wash., is making ferromanganese by the electrolytic process. Many transformer troubles prevented successful operation at the start but the work now is under way again and 20 tons of ore are being smelted per day with a 2-ton output of metal. A three-phase, open-top electric furnace of 5 tons capacity is being used. The sources of ore supply are Montana, British Columbia and Oregon. When transportation from the Olympics in Washington has been solved, another field will be opened. A 13,000-volt transformer which steps down to 60 volts is being used. This is the only plant in the west outside of Tacoma that is making ferroalloys The officers of the company are August Mehlhorn Jr., president; Henry G. Runkel, secretary-treasurer, and George W. White, chemical engineer.

## Builds Steel Foundry

The La Plant-Choate Williams Co., Cedar Rapids, Iowa, successor to the La Plant-Choate Mfg. Co., will install a 5-ton acid open-hearth furnace for the production of steel castings for its own use and the surplus capacity will be devoted to castings for the jobbing trade. John S. Williams, formerly affiliated with the Commonwealth Steel Co., Granite City, Ill., Gould Coupler Co. and the Welland plant of the Canadian Steel Foundries, Ltd., will have charge of the steel casting department. The new company is incorporated with $150,000 capital, and will commence the erection of new buildings immediately. The officers of the company follow: President, E. W. La Plant; vice president, John S. Williams, and secretary and treasurer, R. E. Choate.

The annual meeting of the Worcester branch, National Metal Trades association, will take place in Mechanics' hall in that city, Thursday evening, March 28. Jerome R. George, chief engineer of the Morgan Construction Co., and a councilor of the national association, is president of the branch.

The Walter A. Zelnicker Co., St. Louis, is at the present time distributing bulletin No. 235-238 devoted to specifications of rails, locomotives, cars, tanks, machinery, steel piling, etc., held in stock by that company.

# Men of the Iron Trade

**Personal News of a Business Character Regarding the Men of Affairs of the Industry**

M. H. ANDERSON is now actively engaged in the production of war materials in the capacity of operating vice president of the Symington-Anderson Co., Rochester, N. Y. Mr. Anderson is in charge of the new gun shop of the Symington-Anderson Co. which was described in detail in the Feb. 7 issue of THE IRON TRADE REVIEW. It is believed this plant is one of the most complete and efficient gun shops in existence today. It was built under Mr. Anderson's personal supervision and many of his ideas are incorporated in its construction, arrangement and equipment. Mr. Anderson is a man of wide experience in the manufacturing field. He was associated with the Allis-Chalmers Mfg. Co. for 15 years as superintendent. Subsequently he became connected with the Bethlehem Steel Co. and before leaving this corporation he was in complate charge of all manufacturing. He resigned his position at Bethlehem on March 1, 1917, after eight years' service, in order to become affiliated with the Symington-Anderson Co., which was specifically organized for the execution of a government contract for a large number of 75-millimeter field guns. As previously mentioned in the article in the Feb. 7 issue, which was published with the approval of the war department, the Symington-Anderson Co. will make the guns complete except for the recoil mechicanism and carriages. These will be furnished by other contractors. Mr. Anderson is a man of force and a natural student. With his varied experience at Bethlehem, particularly on ordnance work, he is exceptionally well qualified for the important task in which he is now engaged as vice president and general manager of a gunplant which will be called upon to play a vital part in helping to win the war. Mr. Anderson has complete charge of all operations, shop layout, machinery designs and installation problems. In addition to the gun plant, he is a director of the various other Symington companies.

J. I. Larimer, formerly assistant general superintendent of the Joliet plant of the Illinois Steel Co., Chicago, succeeds as assistant superintendent of the South Works George L. Danforth Jr., who recently was made asistant general superintendent. Charles T. Mason takes Mr. Larimer's former position and J. H. Walsh has been appointed superintendent of rolling mills at the South Works, a newly created title.

A. J. Reuter has been made Portland, Oreg., representative of the Baldwin

M. H. ANDERSON

Locomotive Works, having been transferred from San Francisco.

Allan A. Templeton, president of the Detroit Seamless Steel Tubes Co., is directing the senatorial campaign of Truman H. Newberry.

Albert E. Newton, vice president and general manager of the Reed-Prentice Co., Worcester, Mass., who was in great danger from blood poisoning, has successfully passed the crisis and is recovering.

G. W. Burrell, formerly assistant works manager for the Wellmar-Seaver-Morgan Co., Cleveland, has been promoted to the position of works manager to succeed C. A. Boyd, who resigned recently.

Floyd K. Smith has been chosen vice president of the Donner Steel Co., and will assume his new duties about June 1. He was vice president of the Valley Mold & Iron Corp., Sharpsville, Pa., until early this year. Prior to that he was secretary-treasurer of Banning, Cooper & Co., Pittsburgh.

L. K. Diffenderfer, who for several years has been treasurer of the Thomas Iron Co., Hokendauqua, Pa., resigned recently to accept an important position with the Wharton Steel Co., Wharton, N. J.

D. E. Zollner, who formerly had charge of sales in the tool steel department of the Bethlehem Steel Co., in Cleveland, has joined the aviation corps. So far as is known, he is stationed at Columbus.

G. F. Mitchell has resigned as assistant structural sales agent of the Bethlehem Steel Co., Philadelphia, to take charge of the fabricating department of Morris, Wheeler & Co., Philadelphia.

I. E. Edwards has been made works manager of the ingot mold foundry of the Marshall Foundry Co., Josephine, Pa. He recently resigned as chief engineer of the Valley Mold & Iron Corp., Sharpsville, Pa., after 12 years of service.

A. K. Sutherland has been made general superintendent of the Barnes & Kobert Mfg. Co., Milldale, Conn., nuts, bolts, etc. He has been mechanical superintendent of the Trumbull Electric Mfg. Co., Plainville, Conn.

E. B. Winsted resigned recently as general sales agent in northern Illinois and Wisconsin of the Janesville Machine Co., Janesville, Wis. He has been made manager of the Indianapolis branch of the Stover Engine & Mfg. Co., Freeport, Ill.

Harry Stambaugh, who was secretary of the William Tool Co., Youngstown, O., until it was taken over by the United Engineering & Foundry Co., has been appointed assistant treasurer of the Republic Rubber Corp., Youngstown.

Frederick Holbrook, Boston, has been appointed head of the Hog Island shipyard near Philadelphia by Rear Admiral Bowles, who relieved President Dwight Robinson of the American International Corp. of the duty of managing that plant.

# Men of the Iron Trade

**Personal News of a Business Character Regarding the Men of Affairs of the Industry**

J. LEONARD REPLOGLE at a meeting of the directorate, March 15, tendered his resignation as chairman and director of the Wharton Steel Co., Wharton, N. J. This action, Mr. Replogle explained, was due to the pressure of his duties at Washington as director of steel supply which has made it necessary for him to cut loose from his business connections. W. H. Breevort was elected president of the Wharton Steel Co. to succeed John E. Perry, who resigned as of March 1. Charles B. Ellis was elected a director to succeed Mr. Replogle, and J. H. Hillman Jr. of Pittsburgh, was elected to the other vacancy in the directorate. Mr. Brevoort, the new president of the Wharton Steel Co., previously had no connection with the iron and steel business. For many years he has been prominently identified with gold, copper and silver mining companies in the west.

R. Cairncross Campbell has been appointed by the American International Steel Corp., 120 Broadway, New York, to organize and manage its far eastern department in Tokio, Japan. He will leave shortly and will establish temporary quarters at the Grand hotel, Yokohama.

A. F. Case, when he returns from Europe in April, will assume the duties of engineer in charge of coal handling equipment for Wellman-Seaver-Morgan Co., Cleveland, to succeed Frank E. Hulett, who recently resigned. He formerly assisted Mr. Hulett.

H. L. McKinnon, vice president, C. O. Bartlett & Snow Co., Cleveland, presented a paper on "Sand Conveying Problems", illustrated by lanter slides, at the March meeting of the Pittsburgh Foundrymen's association, held March 18 at the Americus club, Pittsburgh.

S. T. Plimpton, who for 12 years was associated with the Western Electric Co., New York City, and later purchasing agent for the Springfield, Mass., and Plainfield, N. J., factories of the Bosch Magneto Co., has been made purchasing agent for Wellman-Seaver-Morgan Co., Cleveland.

George J. Jackson was recently elected president of the National Conduit & Cable Co. to succeed E. S. Perot. Morton A. Howard was made vice president to succeed E. S. Perot Jr. Mr. Jackson was an important factor in the company prior to its refinancing in 1916, but retired for a time because of ill health.

William A. Klinger, formerly consulting engineer and concrete contractor, Milwaukee, is now located in Washington as designing engineer of reinforced concrete ships with the United States shipping board of the Emergency Fleet corporation. He is secretary of the Concrete Builders' association of Milwaukee.

Charles Piez, vice president and general manager of the Emergency Fleet corporation, will address the twelfth annual meeting and dinner of the National Metal Trades association, Indianapolis branch, at the Claypool hotel, Indianapolis, Monday evening, March 25. Alfred Kauffmann of the Link-Belt Co., Milwaukee, is president of the society.

J. B. Mansfield, who in 1912 became superintendent of the J. E. Bolles Iron & Wire Works, Detroit, and later became vice president, was elected president and general manager at the company's annual meeting recently. J. E. Bolles, who founded the concern 30 years ago and had served as its president since its incorporation, was made chairman of the board.

W. H. Groverman, Minneapolis, was recently named district representative for bituminous and anthracite coal supply on Lake Superior docks as well as those on the western shore of Lake Michigan. He will represent all individual dock companies, facilitate appointments and distribution of coal and supervise prompt and equitable allotment of emergency orders among shippers.

Stanley P. Rockwell, Bristol, Conn., a metallurgist, in charge of eastern territory for the E. F. Houghton Co., Philadelphia, oils and mill supplies, has received a captain's commission in the ordnance reserve corps. He has been assigned to duty in the arsenal at Springfield, Mass. Formerly, Mr. Rockwell was assistant metallurgist for the New Departure Mfg. Co., Bristol, Conn., resigning in December, 1916.

Victor E. Edwards, inventor of mechanical cooling beds, flying shears and other devices for rolling mills, who is vice president of the Morgan Construction Co., Worcester, Mass., has been appointed consulting engineer in the ordnance department of the United States army, at the proving grounds at Aberdeen, Md. He declines to accept a commission and has enlisted for the duration of war.

H. F. Finney, who formerly represented the Chicago and St. Louis territories of the Independent Pneumatic Tube Co., manufacturer of pneumatic tubes and electric drills, has been placed in charge of the company's branch office at Pittsburgh. He succeeds R. T. Scott, who has been promoted to the office of eastern manager with headquarters at 170 Broadway, New York.

John W. Brassington, formerly chief engineer of the American Writing Co., Holyoke, Mass., has resigned as of April 1, to enter the employ of the Emergency Fleet corporation, and John Moles, Erie, Pa., succeeds him. Mr. Brassington assisted in the building of the first American submarine under the direction of Simon Lake at Baltimore in the early nineties.

Landers Sevier, who recently was elected vice president and director of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., began his commercial career in 1887 in a minor position on the Alabama Great Southern railroad, where he has been connected ever since, save for 2½ years when he was general freight agent in the Birmingham district for the Seaboard Air Line railroad. For several years he has been general executive agent of the Southern railway system and his experience fits him to assume the duties of the vice president's office of the Sloss-Sheffield company wherein he will have charge of its transportation problems. Later he probably will take over some of the work in the sales department.

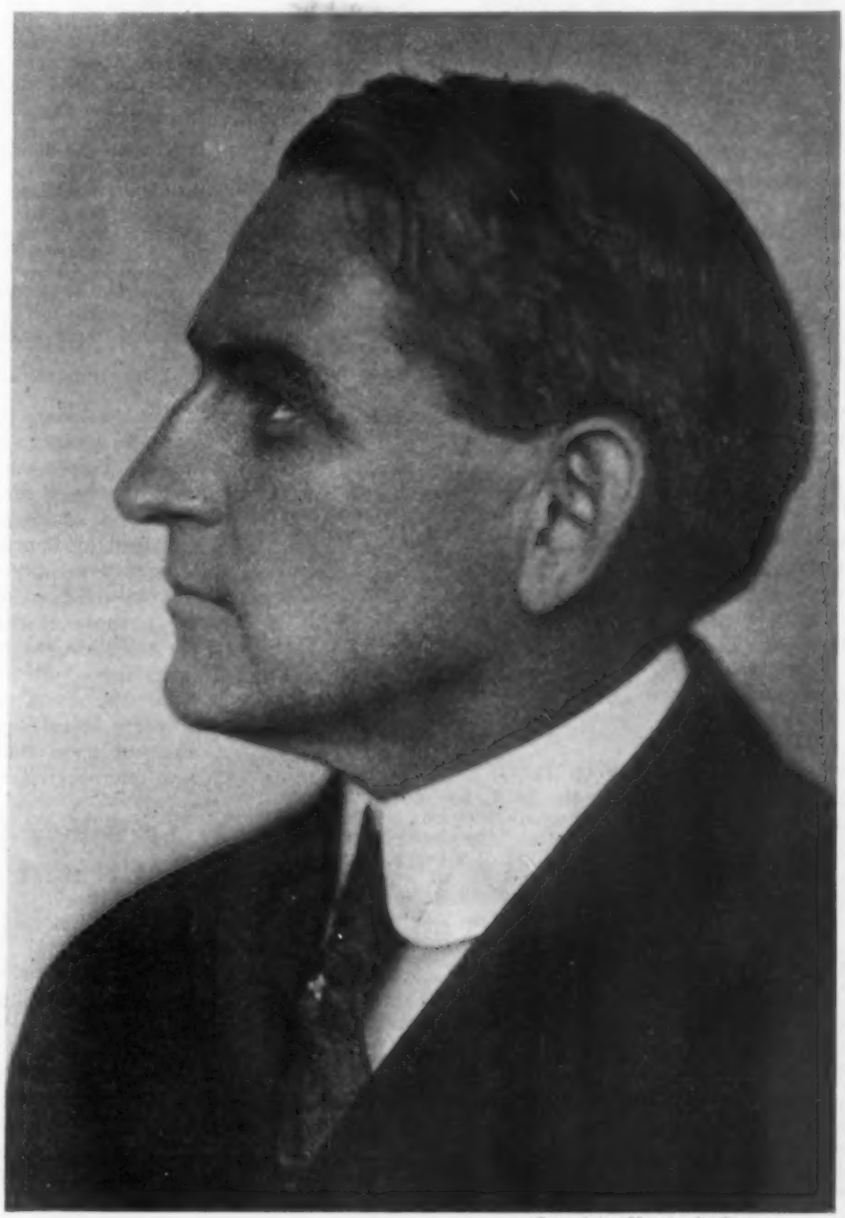
William A. Morgan, resigned recently as vice president and general manager of the Curtiss Aeroplane & Motor Corp., Buffalo, because of ill

health. He retains his position on the board of directors. Shortly after America entered the war, Mr. Morgan sold his interests in the Buffalo Copper & Brass Rolling Mill to the American Brass Co., and retired from business. He took the Curtiss appointment with the understanding that his salary be given the Red Cross. Without waiting for the government to act, he built and financed the present plant, completing construction in 69 days. He resigned on Oct. 1, 1917, and again a few weeks ago, upon his return from California, where he was recuperating. Neither resignation was accepted and two weeks ago he was re-elected.

# Iron and Steel Men in War Machine

## W. S. Blauvelt, Coke Director, Fuel Administration

WARREN S. BLAUVELT, assistant to Fuel Administrator Garfield, probably has had as much to do with the development of the recovery of coke by-products which since the beginning of the war has become so vital to the country's military as well as commercial interests as any other individual. It was the knowledge he possessed of coal as applied to the coking and by-product industry that led to his appointment. In his present post he decides for the government all questions relating to the distribution of coke fuels, prices of coke in various districts and various methods for conserving the supply of coke and other fuels. Mr. Blauvelt's technical training commenced in a practical way in the Singer Sewing Machine Co.'s shops at Elizabethport, N. J. He left this work to enter the Columbia School of Mines. Before he could be graduated he accepted a position at Asbury Park, N. J., in electrical street railway work, which was in its infancy at that time. He then located in Easton, Pa., continuing in the street railway business and after enrolling in Lafayette College for an engineering course, moved to Great Falls, Mont. While there as well as later in Chicago, he was identified with railway work. When he removed to Detroit in 1897, he entered the employ of the Solvay Process Co., and developed a Mond gas producer plant which had just been introduced in this country from England. In 1901 when the Solvay Process Co. built its first block of 30 by-product Semet-Solvay ovens in Detroit, Mr. Blauvelt was made superintendent of the Solvay Process and the Semet-Solvay companies, retaining that position for about 14 years. Resinging in 1915, he was employed by the Steere Engineering Co., Detroit, and did consulting and engineering work for various companies. Now all his time is given to the government. It was Mr. Blauvelt's idea to stimulate production of by-product coke and the resulting coal tar products so essential to military needs by making the government prices on by-product coke the same as beehive fuel.



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WARREN SCOTT BLAUVELT

# Iron and Steel Financial News

**Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers**

# Clear Up Snarls in War Tax Application

NUMEROUS rulings and interpretations handed down by Commissioner Daniel C. Roper of the internal revenue department are beginning to bring some semblance of order out of the bewilderment with which the financial community at first regarded the present war revenue act. With the aid of their lawyers and tax experts, and in many cases with advice from tax collectors, the various corporations which recently have issued their reports for 1917 have been able to arrive at some estimate as to the probable amount of their taxes. In most cases it is believed these estimates will meet with the government's approval, but in others it is possible the federal tax collectors may differ in their ideas of the amount of invested capital and other items. During the past week the treasury department issued a supplement to the excess profits primer giving questions and answers covering returns by individuals and corporations under circumstances not covered by the primer.

*Holds to Dividend Ruling*

Commissioner Roper also has handed down a definite ruling on income from dividends, in which he refuses to change his position that dividends paid in 1917 out of earnings of previous years are to be regarded as 1917 income of the recipient, and taxable as such. He makes an exception of dividends paid during 1917 in excess of earnings during the period elapsing between Jan. 1, 1917, and the date of the dividend payment. The statement follows in part:

"Thus, if a corporation distributed dividends in 1917, such dividends will be deemed to have been paid from the earnings of 1917, and the recipient, if an individual, will be liable to additional tax, if any, and if a corporation, to income tax, at the rates for the year 1917, unless it is shown to the satisfaction of the commissioner of internal revenue that at the time such dividends were paid, the earnings up to that time were not sufficient to cover the distribution, in which case the excess over the earnings of the taxable year will be deemed to have been paid from the most recently accumulated surplus of prior years, and will be taxed at the rate or rates for the year or years in which earned.

"The rule may be applied as follows: Assume that a corporation with a capital stock of $10,000,000 had surplus earnings of $500,000 a year in excess of the amount of dividends paid, making its total surplus on Dec. 31, 1915, $500,000, and on Dec. 31, 1916, $1,000,000.

"On Dec. 31, 1916, it declared a dividend of 2 per cent, payable Feb. 15, 1917. Unless it is shown to the satisfaction of the commissioner of internal revenue that its earnings from Jan. 1 to Feb. 15 were insufficient for the payment of the $200,000 distributed as a dividend on Feb. 15, the entire amount so distributed will be deemed to have been paid from earnings of 1917, and will be taxable in the hands of the stockholders at the 1917 rate. If, however, it is established to the satisfaction of the commissioner of internal revenue that its earnings up to Feb. 15 were but $100,000, then $100,000, or half of the total dividend paid by the corporation on Feb. 15 would be taxable in the hands of the stockholders at the 1917 rates, and the other half would be deemed to have been paid from the surplus of the corporation of 1916 and would be taxable to the stockholders at the 1916 rate. If the dividend paid on Feb. 15 were of such amount as to exceed the ascertained 1917 earnings up to the date of payment and also the 1916 surplus of the corporation, the amount of such excess would be deemed to have been paid from the surplus of 1915 and would be taxable in the hands of the stockholders at the 1915 rate.

*How to Apply Rule*

"All dividends received in 1917, even though paid by corporations from earnings of previous years, constitute income to the recipients for 1917. The method of ascertaining the precise rate applicable to such portions of dividends received in 1917 as within the above rules are to be taxable at rates prevailng for previous years, is as follows: The amount of the income of the recipient to which the 1917 rates are applicable is first ascertained. To such amount is then added the amount of income of the recipient liable to tax at the 1916 rates and the table of 1916 rates applied to see in which brackets such income falls; the income liable to 1915 rates then added and the table of 1915 rates applied to it. For instance, an individual has $20,000 of income liable to 1917 rates and $25,000 of dividends liable to 1916 rates. The total would be $45,000, of which $20,000 would be taxable at the 1917 rates, $20,000 to $40,000 at the 1 per cent additional tax rate under the 1916 table and $5000 at the 3 per cent additional tax rate under the same table. If he had another $25,000 dividend liable at 1915 rates, the first $5000 would fall in the bracket between $20,000 and $50,000 at the 1 per cent additional tax rate, and the other $20,000 in the second bracket of $50,000 to $75,000 at the 2 per cent additional tax rate under the 1915 table.

"In order that this office may verify the correctness of the rates, taxpayers reporting dividends received at other than 1917 rates, under the various columns in block F of from 1040 will be required to render a statement at the time of filing the return, or at a subsequent date, showing the corporations from which dividends taking other than 1917 rates were received, with the amount of dividend received from each.

*Warning is Sounded*

Commissioner Roper also recently warned against bulletins issued by several trade organizations advising their members that increment or appreciation of property values as ascertained by appraisal may be treated as earned surplus or undivided profits and included in invested capital for the purpose of the excess profit tax. He said that the law expressly places the computation of invested capital upon the basis of cash and other property actually put into the business and not upon that of present valuation or appraisal of its assets.

## La Belle's Steel Output Greatest in History

Net earnings of the La Belle Iron Works in 1917 were equivalent to 56.5 per cent a share on the $9,915,400 outstanding common stock, as compared with 32.2 per cent in 1916.

The company's annual report, just made public, shows a balance after deducting $5,189,302 excess profits taxes of $6,396,927, against $4,488,601 in the year previous. In 1915 the balance was $927,847, and in 1914 it stood at $273,244. The aggregate

value of shipments for the year was $31,656,268 as compared with $19,598,-155 in 1916. The company's comparative income account follows:

| | 1917 | 1916 |
|---|---|---|
| Total income | $14,198,404 | $6,434,318 |
| Mining exhaustion, depreciation, etc. | 1,406,843 | 675,565 |
| Net earnings | 12,791,560 | 5,758,752 |
| Inventory reserve | 1,200,000 | 1,000,000 |
| Discount on bonds sold | ..... | 191,151 |
| Prem. on bonds purch. | 5,330 | 79,000 |
| Excess profit tax | 5,189,302 | ..... |
| Balance | 6,396,927 | 4,488,601 |
| Dividends | 1,983,080 | 1,388,156 |
| Surplus | 4,413,847 | 3,100,445 |
| Surplus Jan. 1 | 5,656,763 | 3,056,318 |
| Exting. lease values | 550,000 | ..... |
| Balance | 9,520,611 | 6,156,763 |
| General depreciation | ..... | 500,000 |
| Total surplus | 9,520,611 | 5,656,763 |

In his report, President R. C. Kirk says:

"While the production of open-hearth steel for the year again exceeded the production during any similar period in the company's history, the tonnage of finished goods produced was less than that for the preceding year. This reduction was due to the greater scrap loss involved in the manufacture of certain war materials and inability of the roads to furnish adequate transportation facilities."

The report shows that pig iron produced in 1917 was 260,182 tons compared with 257,623 in 1916; ingots, 419,491 tons against 416,783 tons; billets and slabs, 350,053 tons against 350,426 tons; finished material, 394,-249 tons against 416,827 tons.

The company produced during the year 364,940 tons of iron ore, an increase of 3.4 per cent over the previous year. The by-product coke plant of 94 ovens placed in operation March 1, 1917, produced 307,103 net tons of furnace coke, 4,254,194 gallons of tar, 5499 net tons of sulphate of ammonia, 669,320 gallons of benzol and 179,023 gallons of toluol. During the year the company acquired 3581 acres of steam coal in West Virginia and 3045 of coke lands in Pennsylvania.

## Expects Post-War Demand

In 1917 the net earnings of the National Acme Co., Cleveland, were $3,664,301. This is equal to $7.32 a share or 14.65 per cent, after allowing $1,500,000 for federal taxes. Net sales totaled $16,630,563, and the net profit from operations was $5,218,984. From this last figure, $109,851 was deducted covering royalties paid, bad debts and experimental expense, and $56,068 was added covering royalties received, interest and exchange, etc.

President W. D. B. Alexander in the annual report says in part: "Following the close of the war the indications are excellent for a good foreign business, both in Gridley and Acme screw machines. It is estimated that the demand will continue for two or three years at least, after which general world conditions then prevailing will presumably govern as to the future demand."

## Nova Scotia Gain Large

A consolidated statement of the Nova Scotia Steel & Coal Co., New Glasgow, N. S., and its subsidiary the Eastern Car Co., shows total current assets in excess of liabilities of over $10,000,000. Combined profits from operations, after depreciation, interest charges, etc., for the year ended Dec. 31, 1917, totaled $3,069,-449. Net profits of $2,093,336 remained after making allowance for income tax, commissions, discounts, etc. After interest on bonds of both companies, bank loans, etc., the net gain was reduced to $1,340,477, which added to the Jan. 1, 1917, surplus of $3,532,114 made the total surplus $4,872,592. Dividends paid totaled $3,-142,500 leaving a surplus of $1,730,-092 to be carried.

## Earnings Are Reduced

The Yale & Towne Mfg. Co., Stamford, Conn., reports net earnings of $2,867,510 for the year 1917, compared with $3,386,426 in 1916. Net profits were $1,989,991, or $40.21 a share, compared with $2,723,847, equal to $57.56 a share, for the previous year. Dividends were $989,614 compared with $1,513,539 in 1916. The income accounts compare as follows:

## Official Changes Made by Sloss-Sheffield

Directors of the Sloss-Sheffield Steel & Iron Co. last week elected Waddilll Catchings chairman of the board, succeeding Col. J. C. Maben. Mr. Catchings recently resigned as president of the company to enter the banking house of Goldman, Sachs & Co., New York. The directors likewise elected Landers Sevier, to the vice presidency. Mr. Sevier previously was made a director. Other officers re-elected are: President, J. W. McQueen; secretary and treasurer, Russell Hunt; assistant secretary and assistant treasurer, Charles J. Farrell; assistant treasurer, L. D. Burr; auditor, Hugh Frankiin. President McQueen, in a statement to stockholders, expressed belief that the outlook for the company in 1918 was good, despite the uncertain conditions. The statement in part follows:

"The past year has been one presenting extreme difficulties in your company's operations. Interruptions in transportation made it impossible for the company to ship large quantities of pig iron on hand which had been sold and which was urgently needed by the buyers. Other conditions affected operations in a marked way. The abnormal conditions affecting your company's operations during the year seemed to your management to necessitate the maintenance of your company in a strong cash position, particularly in view of the early maturity of a portion of your company's only bonded indebtedness of $4,000,-000. Therefore, your management deemed it prudent to be conservatice in respect to its dividend policy.

## Radiator Net Increased

Appreciable progress was made by the American Radiator Co. in its profit record during 1917. Net profits, after providing $1,000,000 for federal taxes and after all other deductions, totaled $3,261,871 as against $2,604,067 in 1916. In his statement to stockholders, President C. M. Wolley said:

The profits of the Canadian, English, French and Italian companies aggregated $932,356 and the combined net profits of the parent and constituent companies were $4,214,427. The profits of the parent company were equivalent to 24.8 per cent on the common stock, and the combined profits to 32.6 per cent.

President Wolley says: "It is obvious that on the downward swing of commodity prices, if such shall take place, a heavy loss may be incurred in materials and product meanwhile accumulated and the company during the last three years of ascending costs has accumulated a reserve of $1,250,-000 to maintain the integrity of its inventories.

"The company's cash balance Dec. 31 was $2,681,155 and during the year improvements were made in the sum of $1,490,166."

## Earnings Show Increase

With an increase of $281,002 over the net earnings of 1916, the United States Cast Iron Pipe & Foundry Co. reports net earnings for 1917 of $1,820,744. After all charges and deductions, the balance for the year is $1,324,140 which is equal to $11.18 a share on $12,000,000 preferred stock, against $10.90 a share in 1916. While $144,000 was reserved for depreciation in 1916, in 1917 this was increased to $403,640. A comparative income account follows:

| | 1917 | 1916 |
|---|---|---|
| Net earnings | $1,820,744 | $1,539,742 |
| Other income | 42,351 | 30,154 |
| Total income | $1,863,095 | $1,569,896 |
| Depreciation reserve | 403,640 | 144,000 |
| Interest | 117,314 | 117,255 |
| Balance | $1,324,140 | $1,308,641 |

# Await Greater Ordnance Production

### Machine Industry Sees Indication of Heavier Buying of Equipment and Wider Distribution of War Orders to the West in Munition Zone Plan— Demand for Light Tools Continues Steady

RECENT developments in the war situation are reflected by the attitude of machinery dealers, who express the belief that munition and ordnance work will not only continue but will be greatly extended in the next few months. Eastern arms factories as indicated last week are absorbing the business involved in supplying the Browning gun, and although new equipment will be required, the fact that the machine gun requires few operations other than those performed in making rifles probably will limit the tool demand in this field. A shifting of war contracts westward is indicated by the fact that central western machine shops are being urged to perfect and extend their equipment, and by the opinion expressed in many quarters that eastern plants are booked to capacity. The plan under consideration for the creation of 10 munition zones is believed suggestive of this condition. This decentralization also would indicate the westward trend of impending orders. Buying is limited where private enterprise is the motive, and the high prices and shipping conditions probably serve to aggravate this tendency. The light tool demand continues scattered but consistent.

Intensified interest in the paramount shipping problem is resulting in more projected shipyards. The senate commerce committee which is approaching the end of an extended investigation of the ship problem will make recommendations for new yards which will require extensive crane equipment. Wilmington, N. C., and Brunswick, Ga., are points mentioned as the probable locations for shipbuilding plants. The present crane demand is light, following the extensive inquiry which terminated in bids received by the navy department last week.

# New Munition Orders to be Distributed Westward

THE eastern machine tool market is characterized by a steady, even flow of inquiry. Although a few fairly large lists are appearing, demand is made up for the most part by small lots needed by manufacturers in replacing old machines and in rounding out equipment. Some machinery is being bought quietly by the companies holding contracts for the manufacture of Browning machine guns, but the extent of these purchases is not known. It is believed, however, that the total number of new tools to be purchased will be relatively small, as considerable equipment used in the production of rifles will be devoted to this work. Of the companies working on Browning gun contracts, the Colt's Patent Fire Arms Co., Hartford, Conn., is understood to be the latest to close on additional equipment.

*War Orders Shift Westward*

While there still are a number of miscellaneous inquiries, the eastern machine tool market now appears to be the slowest in some time. This is accounted for in a large measure by the gradual shifting of war contracts from the east to the west, where plants are not so heavily booked. In line with this policy of wider distribution of contracts, the war department recently announced the establishment of munition zones, which embrace the chief industrial centers of the country. There are 10 of these zones with headquarters established as far west as Chicago. This, it is believed, will not only make for decentralization, but will bring the government in closer contact with the manufacturers.

Rumors still persist that contracts for heavy artillery will be placed shortly, which not only will result in considerable expansion among plants in the east, but will, in some instances, bring about the establishment of entire new plants. Nevertheless, no marked increase in demand in this market is anticipated for the immediate future. Several dealers have advanced their prices on sensitive drills 10 per cent.

*Miscellaneous New Government Work Impends*

The large inquiry which recently was put out by the Wright-Martin Aircraft Corp. for equipment for its New Brunswick, N. J., plant, has not as yet been closed. This is practically the only large list in the eastern machine tool market at this time. The gas defense service of the government has established a plant at Long Island City, N. Y., and recently has purchased several miscellaneous tools. The Brooklyn navy yard is inquiring for a couple of punching machines and other equipment. Considerable interest is manifested in some of the items carried in the naval appropriation bill, which recently was approved by the house committee on naval affairs. Included in the appropriations are $48,309,520 for new naval batteries and $24,194,045 for other ordnance. The establishment of a $4,000,000 drydock at Charleston, S. C., is proposed in the bill; also a $300,000 power house at Philadelphia and $200,000 power house at New York. Another yard at Charleston, S. C., is to be established by the shipping board for the construction of merchant vessels.

The senate commerce committee, it is understood, will ask for an appropriation for two additional shipyards along the Atlantic coast, Wilmington, N. C., and Brunswick, Ga., being mentioned as possible sites. It is proposed that one of these yards shall be owned and operated by the government, and the other, perhaps, will be erected by private owners under a contract similar to that drawn up for the Hog Island plant. The Baltimore Dry Dock & Shipbuilding Co., Baltimore, has been awarded a government contract for the construction of six steel tankers of 6000 tons deadweight capacity. The Baltimore company recently purchased some new equipment, and

A three-thousand-year-old quality standard, religiously adhered to, and up-to-the-minute manufacturing methods are responsible for Agathon successes.

In three short years Agathon Alloys have risen from a mere name to their present position of eminent supremacy.

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***AGATHON Nickel Steels***
***AGATHON Chrome Nickel***
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## The Central Steel Company

**Massillon, Ohio**

**Sales Offices**

**Detroit Office:** 326-27-28 Ford Bldg. F. Walter Guibert, District Representative.
**Cleveland Office:** Hickox Building. The Hamill-Hickox Company, District Representatives.
**Chicago Office:** 1370 People's Gas Bldg. 122 S. Michigan Blvd. C. H. Beach, District Representative.
**Philadelphia Office:** 603 Widener Bldg. Frank Wallace, District Sales Manager.
**Syracuse Office:** 621 University Blk. T. B. Davies, District Sales Manager.
J. E. Dockendorff & Co., 20 Broad St., New York, General Export Agents.

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is understood to still be in the market. The United States Rubber Co. has purchased, for a consideration of $500,000, the plant of the American Locomotive Co. at Providence, R. I., which formerly manufactured automobiles, but recently has abandoned this work. The Uniontown Foundry Co., recently organized, will build a foundry at Uniontown, Pa.

*Crane Demand is Light*

Demand for cranes at this time continues light, although a fair amount of business is before the market. The Pennsylvania railroad has not closed as yet on its inquiry for one five and one 10-ton electric crane, neither has it placed the 336 one-ton jib cranes recently inquired upon for the government for shipment to France. No announcement has been made by the government relative to the allotment of cranes, on which bids were opened March 11. The Stone & Webster Co., Boston, is inquiring for a coal handling crane, with a 2-ton bucket, for the Buffalo General Electric. The General Electric Co., Schenectady, N. Y., is in the market for several electric cranes, of five to 15 tons capacity for its plants at Everett and West Lynn, Mass. The General Electric Co. recently closed on a 20-ton electric crane, with a 20-ton main hoist and 5-ton auxiliary, for its Everett plant, this business going to the Northern Engineering Works, Detroit. This latter company has just received an order for three 15-ton electric cranes from the Vulcan Iron Works, Jersey City, N. J. The Morgan Engineering Co., Alliance, O., has been awarded a contract by the Tindel Morris Co., Eddystone, Pa., for one 60-ton and two 10-ton electric cranes.

*Light Machine Orders Predominate*

SUBCONTRACTORS and those who recently have received orders for airplane work and motor parts furnish the bulk of the inquiries for light machinery in the Cleveland district. During the present week a number of contracts passed verbally during the last two weeks have been executed. One jobber reports $62,000 in orders for small multiple spindle drills. Anticipated munition orders are the basis upon which a number of machines of various classes are held on option, one large order being held in abeyance pending a letting which has been postponed in Washington. Delivery conditions remain most unsatisfactory in this district. Inquiries for heavy forging equipment, it is stated by one dealer, indicate the development of a new condition in ordnance manufacturing. Eastern manufacturers have absorbed the greater part of the early light ordnance and munition orders, and the heavy ordnance work which is contemplated will probably be carried out by middle western plants. A 48-inch boring mill is inquired for by Heppenstall Forge & Knife Co., Pittsburgh. Rickert-Shafer Co., Erie, Pa., is in the market for a universal grinder. The Bedford Foundry & Machinery Co., Bedford, Ind., has inquired for an 1100-pound steam hammer. The Borden Co., Warren, O., desires one Potter & Johnson automatic machine. The Keystone Driller Co., Beaver Falls, Pa., wishes an 1100-pound steam hammer, and C. A. Turner, Inc., Pittsburgh, is inquiring for a 1500-pound steam hammer.

*Enlarge Potential Munition Plants in Chicago*

MACHINERY dealers in the Chicago market find a continued quiet market, most inquiry and selling being of lighter equipment and single tools or small lots. The aggregate of this dealing is fairly large but does not compare with the total involved in sales of former months when large installations were being bought. A tendency has become manifest for concerns equipped for making shells and gun carriages to accede to the request of the government and enlarge their facilities further, some even doubling their equipment along these lines. An instance of this is the Winslow Bros. Co., which is about ready to begin work on a large government contract and is seeking equipment for practically double the capacity now provided. The projected munition plants which have been under consideration in a vague way for this city have not materialized and inquiries as to possibilities of obtaining equipment have not been acted on. Some concerns preparing to enter the munition field are delayed by nonarrival of material and machinery.

*Pittsburgh Consumers Await Government Prices*

DOMESTIC buying of machinery and machine tools is extremely limited in the Pittsburgh district. Sellers continue to receive inquiries on government business, a considerable portion of which involves cranes for munition plants. Shipments from plants are better and it is believed that after the government has acted on prices for iron and steel products on April 1, private consumers will come into the market more freely. Buying has been withheld by them on account of high prices and deferred deliveries.

# New Construction and Equipment

**Concise and Timely Business Building Opportunities from the Field of Industry**

## Among New England Factories

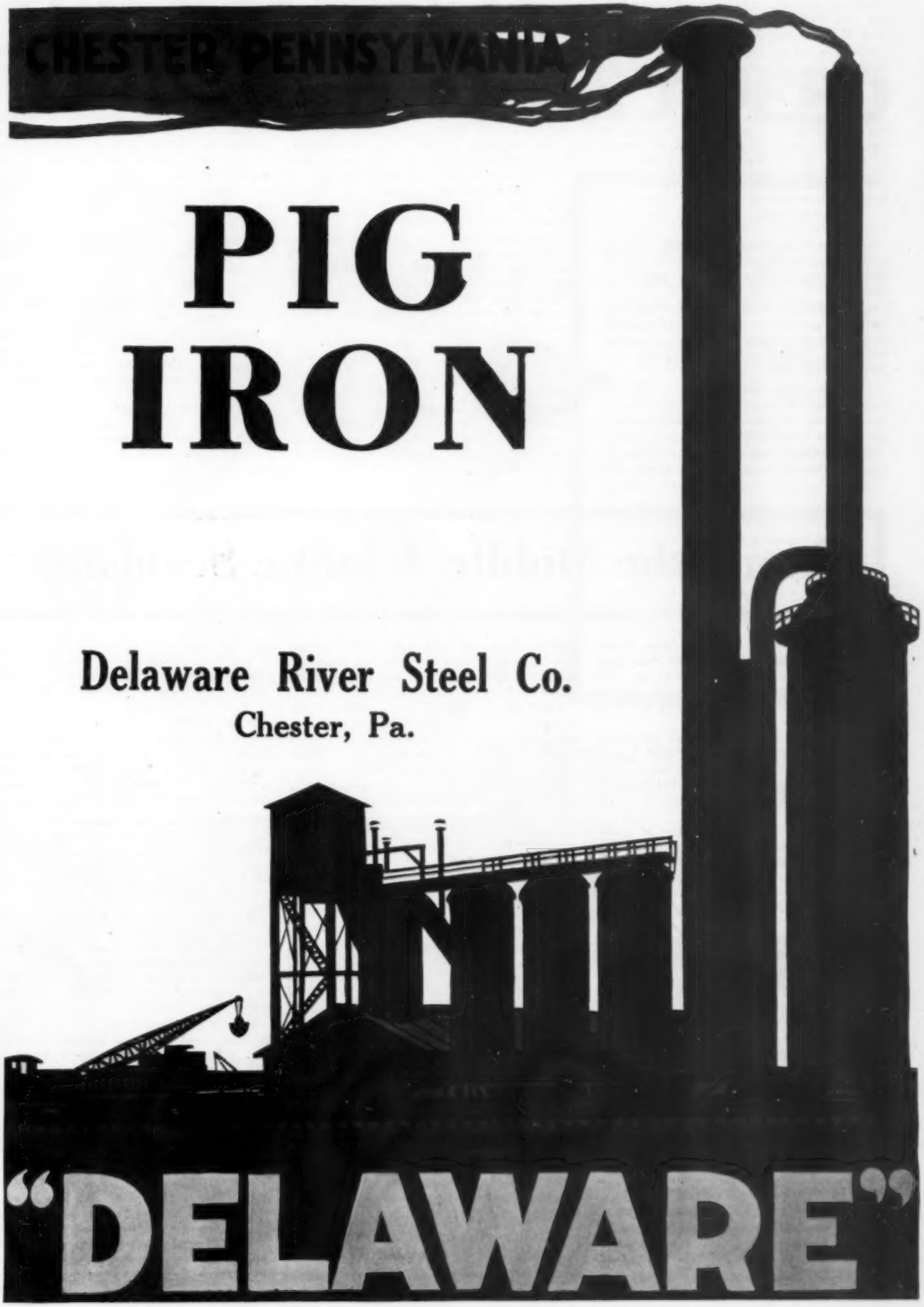
AUGUSTA, ME.—The Shand Safety Window Hardware Co. has been incorporated to manufacture building materials with $300,000 capital, by E. M. Leavitt and Ernest L. McLean.

PORTLAND, ME.—The Dorr Miller Differential Co. has been incorporated to manufacture appliances, devices, machinery, etc., for railroads, automobiles and trucks, with $750,000 capital. George T. Spear and Frederick V. Chase are interested.

ATTLEBORO, MASS.—New bids will be received by F. P. Sheldon & Son, engineers, Providence, R. I., on the proposed $50,000 pattern storage building to be erected for the Howard & Bullough-American Machine Co. Plans call for the construction of a 2-story building, 74 x 400 feet.

BOOTHBAY HARBOR, ME.—The M. & M. Machinery Co. has been incorporated with a capital of $5000 to manufacture machinery, by Ernest F. Merrow and Simon P. MacAskill, Boothbay Harbor, and Harold K. Merrow, Hyde Park, Mass.

BOSTON.—The Fire Protection Securities Co. has been incorporated to manufacture all kinds of machinery and appliances to protect

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buildings from fire. The company was organized with $5000 capital, by L. W. Gale, Frederick H. Nash and W. R. Pond.

BOSTON.—The Jalisco Mining Co. has been incorporated with $100,000 capital by Harry N. Canoll, V. H. Mayr and M. A. Maguire.

BOSTON.—The J. L. Bertsch Co. has been incorporated to manufacture gas and electric fixtures, etc., with $15,000 capital, by Joseph L. Bertsch, R. B. Walsh and J. J. Murphy.

BOSTON.—The Boston Metal Works Inc. has been incorporated with $7500 capital by A. G. Decatur, Arthur J. Driscoll and G. N. Canata.

BOSTON.—The Consolidated Mfg. Co. has been incorporated with $50,000 capital by Samuel Bergson, Harry Bergson and F. A. Cleary.

BOSTON.—The Centrifugal Gun Corp. has been incorporated to manufacture munitions with $1,000,000 capital by Frank L. Jones, Somerville, Mass.; Edwin C. Fisher and Earle L. Ovington, Newton, Mass.

BROOKFIELD, MASS.—The power station of the Warren, Brookfield & Spencer street railway was damaged by fire March 4, with a loss of $75,000.

SPRINGFIELD, MASS. — The Gilbert & Barker Mfg. Co., pumping equipment, has purchased a large tract of land, valued at $11,500, adjoining its plant, and will build an addition for the making of war products.

WALPOLE, MASS.—Lockwood, Green & Co., engineers, Boston, have awarded the general contract for the erection of an addition to the plant of the Lewis Mfg. Co. to W. J. Bishop, Boston.

WESTFIELD, MASS. — The Hamilton Abrasive Co., which has been incorporated with $50,000 capital by F. D. Hamilton, Louis M. Fuller and H. B. Putnam, will build a brick, concrete and steel, fireproof, 40 x 200-foot factory, a 2-story, 32 x 50-foot crushing plant and other plant additions.

EAST GREENWICH, R. I.—The Gallaudet Aircraft Corp. has let the contract for a mill construction, 1-story, 180 x 200-foot machine shop, a 2-story, 25 x 52-foot addition to its machine shop, and two other 1-story additions to its manufacturing plant on Chepiwanexet island, to cost $55,000.

EAST PROVIDENCE, R. I.—Fire in the forge building of the Eastern Bolt & Nut Co., March 8, which was engaged in war work, caused several thousand dollars damage.

BRIDGEPORT, CONN. — The Remington Arms-Union Metallic Cartridge Co. has let the contract for a brick, 1-story, 61 x 417-foot addition to its factory on Seaview avenue, to cost $30,000.

BRIDGEPORT, CONN. — The Yalelmus Corp. of New Jersey will build a 2-story factory building at 128 Thompson street.

BRISTOL, CONN.—The plant of the Peck & Young Mfg. Co. was damaged by fire with a loss of $8000 March 11.

HARTFORD, CONN. — The Capital City Lumber Co. will erect additions to its plant, to cost in all $30,000. The proposed work calls for the erection of three 2-story buildings, 32 x 72 feet, 38 x 53 feet and 38 x 22 feet, respectively; also a 1-story building, 31 x 75 feet. Ford, Buck & Sheldon are the engineers in charge of the work.

NEW BRITAIN, CONN.—The tinning room at the plant of Landers, Frary & Clark was damaged by fire March 11 with a loss of $5000.

NEW LONDON, CONN.—Plans are being drawn for a brick, 1-story, 60 x 148-foot storage battery building for the government at the submarine base.

WATERBURY, CONN. — The Waterbury Electrical Repair & Engineering Co. has been incorporated with $10,000 capital by Leon M. Mitchell, Frank Clearwater and George V. Bird.

WATERFORD, CONN. — The Connecticut Ship Building Co. has been incorporated with $500,000 capital by Emaraw J. Eaton, Jonathan Starr and John J. Lawless, New London, Conn.

# Along the Middle Atlantic Seaboard

BROOKLYN, N. Y.—The Brooklyn Union Gas Co., 176 Remsen street, has had plans prepared by the Bartlett-Hayward Co., 100 Broadway, New York, for an oil tank building to cost $8000. The structure will be 73 x 95 feet.

BROOKLYN, N. Y.—The George W. Baker Shoe Co. has purchased a site on Third avenue, between Baltic & Warren streets, for a plant to cost approximately $200,000. The tentative plans are being drawn for a structure, 50 x 200 feet.

BROOKLYN, N. Y.—A charter of incorporation has been granted to the A. Bassett Iron & Wire Works, capitalized at $10,000. The incorporators include Alexander Bassett, care of the company, Edward Breit and Solomon Schub.

BUFFALO.—The Buffalo Wagon Works will build an addition to its plant. Joseph A. Brown, architect, is drawing plans calling for a 2-story structure, 11 x 50 and 33 x 43 feet.

BUFFALO.—The Westinghouse Electric & Mfg. Co. is planning to build a plant 145 x 280 feet to replace the one which was recently damaged by fire.

BUFFALO.—The Hesshin Boiler & Tractor Corp. will build a plant soon. Address George E. Smith or Edward H. Butler, Buffalo, N. Y.

BUFFALO. — The Automotive Engineering Trefts and John C. Trefts, Hamburg, N. Y., Corp. has been chartered to manufacture carburetors, motors and engines. The capital is $125,000 and the incorporators are H. R. H. Richards, E. McM. Mills and H. C. Spratt.

BUFFALO.—The Brown Car Wheel Works Inc. has been granted a charter to manufacture car wheels. The capital stock is $500,000. Howard G. Brown, Buffalo; George M. are incorporators.

CITY ISLAND, L. I., N. Y.—Kyle & Purdy, yacht builders, will erect a $150,000 addition to their shipyard. J. Robert Kaplan, architect, has filed plans recently, calling for a 3-story hollow-tile building, 155 x 180 feet.

EAST MT. VERNON, N. Y.—The Triplex Safety Co. is having plans drawn for a factory and office building, to cost $50,000. Charles Ward Hall, 140 Nassau street, New York, will be in charge of the construction.

CORTLAND, N. Y.—The Cortland Specialty Co. will erect an $8000 addition to its chemical plant. The proposed structure will be one and two stories, 67 x 177 feet.

FREEPORT, L. I., N. Y. — Plans have been prepared for a factory to be 1-story, 55 x 100 feet, for the Columbia Bronze Corp. The structure will cost $15,000. Contract has been awarded to William G. Miller, Inc., 24 South Grove street.

NEW YORK. — The Dukeshire Steel & Forge Co., Inc., has been organized with $25,000 capital to engage in the manufacture of iron and steel forgings. The incorporators include W. F. Dukeshire, W. B. Dukeshire and B. F. Schwartz, 299 Broadway, New York.

NEW YORK.—The Putnam Mining Corp. has been chartered with $250,000 capital to engage in a mining, quarrying and metallurgical business. The incorporators are C. S. G. Fettretch, 3089 Broadway; A. Grometstein, 570 West 156th street, and others.

NEW YORK.—A charter of incorporation has been granted to the Hidalgo Steel Co., Inc., organized with a capital of $30,000 to manufacture machinery and hardware. The incorporators are A. F. Zoeller, H. H. Meyer, 253 Broadway, and E. H. Wells, 150 Nassau street, New York.

NIAGARA FALLS, N. Y.—The International railroad plans to remodel its machine and repair shops at the foot of Spruce avenue. L. C. Connette, Ellicott square, Buffalo, is president of the company.

NORTH TONAWANDA, N. Y.—The Wagenschuetz Hardware Co. has been incorporated with a capital of $20,000. The incorporators are L. A. Wilke, F. F. and G. Wagenschuetz, and others.

PHOENIX, N. Y.—The Three Rivers Machine, Tool & Die Corp. has been organized with $30,000 capital to take over the plant of the Oswego Machine, Tool & Die Works. The officers of the new company are Maxwell R. Karge, president, Charles F. Loomis, secretary and treasurer, and others.

POUGHKEEPSIE, N. Y.—The Ideal Tool

## Government Inquiries

*Bids on the following equipment are desired by the navy department, bureau of supplies and accounts, Washington:*

One boring and drilling machine;
One vertical boring mill;
One planer;
One crank slotting machine;
Three crank shapers;
Two upright drilling machines;
One radial drill;
One gap grinding machine;
Two emery grinders;
One hacksaw;
Several engine, extension turret, and buffing lathes;
One pipe expanding and flanging machine.

*These tools are listed under schedule number 1732 and are to be delivered at Philadelphia. The date of opening is not specified.*

# THE NATION IS COUNTING ON SPEED

—Speed in the air, on the land, and on the sea—on the battle-fields of France, in the munition factories of our great cities—and on the vast agricultural fields of the country. Everywhere we must have SPEED—and then MORE SPEED.

And wherever extra speed is applied, there will be an unusual strain or exertion which must be met. Ordinary machines will not do—we are at war—we must have machines that will be able to keep up the pace set by the wheels of war.

TODAY—whether you are building airplanes, motor trucks or farm tractors, you must have castings of exceptional quality—you must have castings built to meet SPEED STRAINS.

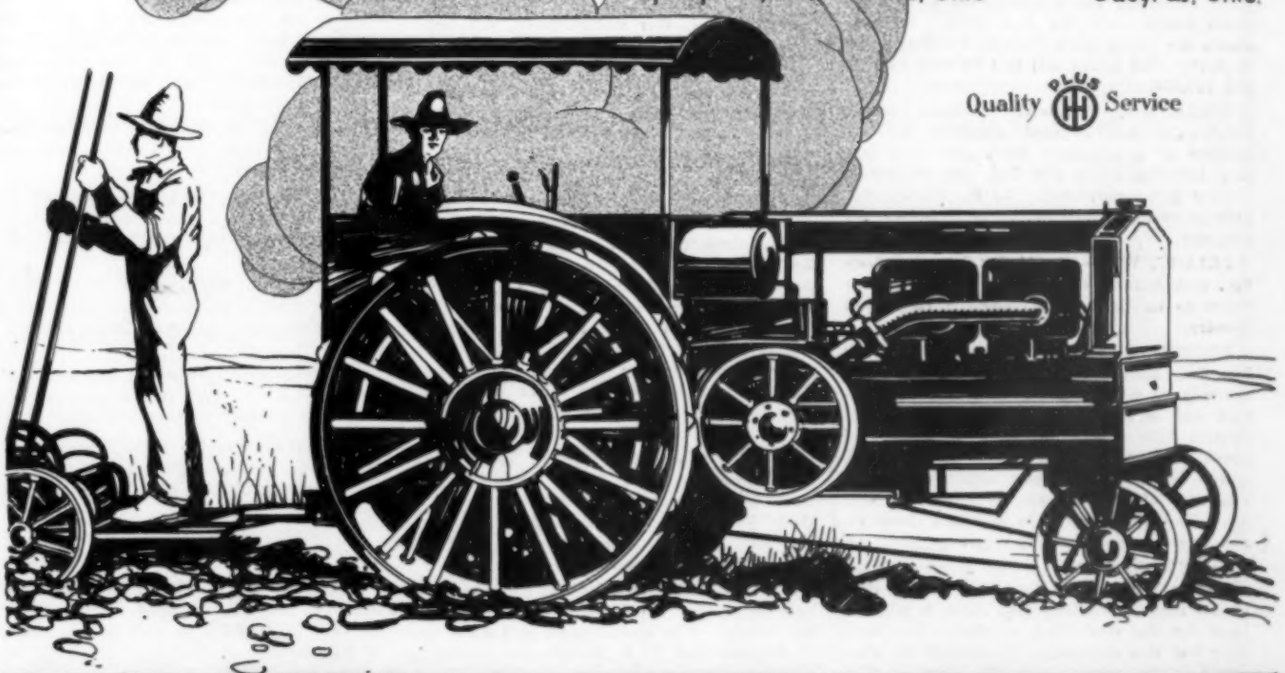
SPECIFY OHIO STEEL CASTINGS and YOU WILL NOT BE DISAPPOINTED.

Let us figure on your requirements.

**The Ohio Steel Foundry Co.**

PLANTS
Springfield, Ohio Lima, Ohio Bucyrus, Ohio.

Quality PLUS Service



& Machine Co. has increased its capital from $10,000 to $25,000.

ROCHESTER, N. Y.—The Castle-Wilmot Co., 800 St. Paul street, has had plans prepared by O. W. Dryer, architect, Cutler building, for a 2-story factory addition, 28 x 124 feet, and a 1 and 2-story addition, 14 x 60 feet in size.

UTICA, N. Y.—The Genesee Motor Car Co. has increased its capital from $5000 to $100,000.

YONKERS, N. Y.—The Continental Shipbuilding Co. has leased waterfront property at Ludlow Station, opposite Yonkers, for the building of wooden ships. The property contains three acres of upper land, one acre under water, a dock and other structures. S. P. Masten is president of the company.

CORRY, PA.—The plant of the Raymond Mfg. Co. was damaged by fire recently. The company held contracts for the manufacture of springs for Curtis airplanes.

HILLSVILLE, PA.—The crusher building and trestle at the plant of the Union Limestone Co. have been severely damaged by fire, the loss being estimated at several thousand dollars. The damage will be repaired at once.

KITTANNING, PA.—The Kittanning Iron & Steel Co. has taken over the plant of the Kittanning Plate Glass Co., which it will equip as an addition to its plant.

MILTON, PA. — The Milton Mfg. Co., maker of pressed steel products, has awarded to Sauers & Moore, 66 Broadway, New York, the general contract for a 1-story pump house, 30 x 92 feet, to cost $10,000.

PHILADELPHIA. — Bids were received March 7 by Samuel T. Wagner, engineer, for the construction of an engine house and machine shop, to be built by the Philadelphia & Reading railroad.

SHARON, PA.—The Sharon Waterworks Co. plans to build a bridge with 70-foot spans. The estimated cost is from $40,000 to $50,000.

EAST ORANGE, N. J.—The Union Drawn Steel Co. has been incorporated with $1,500,000 capital stock to manufacture steel products. F. H. Advence, Poughkeepsie, N. Y.; Thomas McConnell and Samuel Heppenstall, Pittsburgh, are the incorporators.

ELIZABETH, N. J.—Levering & Garrigues, 652 West Twenty-third street, New York, have been awarded the general contract for a 1 and 2-story plant addition, 160 x 440 feet, for the Duesenberg Motors Corp. J. M. Didrickson is architect.

ELIZABETH, N. J.—The Stubner Chemical Works Inc. has been incorporated with $100,000 capital to manufacture chemicals. C. L. Rimlinger, M. M. Clancy and C. M. Egner, Wilmington, Del., are incorporators.

GIBBSTOWN, N. J.—A portion of the plant of the Du Pont Powder Co. was damaged by fire recently, with a loss of $60,000.

HOBOKEN, N. J. — The National Tube Co. has increased its capital stock from $80,000,000 to $85,000,000.

MAYS LANDING, N. J.—The Bethlehem Steel Co. has begun the work of constructing the big plant for the Atlantic Loading Co. The plant will be operated under the immediate direction of the government.

NEWARK, N. J.—The American Thermostat Co. has been chartered with $125,000 capital to manufacture thermostats. Albert S. Bevens, Louis Hodecker and Donald W. Smith are incorporators.

PASSAIC, N. J.—The National Anode Co. has been incorporated with a capital of $100,000 to manufacture copper castings. The incorporators are Albert R. Bray, William F. Rothlisberger, Newark, N. J., and others.

WILMINGTON, DEL.—Preliminary plans have been completed for a $10,000,000 plant to be erected in this city by the Sugar Refining Co. J. H. Ott & Co., 1731 Real Estate Trust building, Philadelphia, will be in charge of construction.

HAGERSTOWN, MD.—The Western Maryland Railroad Co. has awarded to the Price Construction Co., Baltimore, the general contract for the erection of a $10,000 addition to its driving wheel shop.

PERRYVILLE, MD.—The Atlas Powder Co. will erect a $7,000,000 powder plant at this point. The F. T. Ley Co., Inc., 19 West Forty-fourth street, New York, is engineer and builder.

# Activities in the Central States

ANTIGO, WIS.—Joseph Sharon Jr. contemplates building a plant for the manufacture of a patented steel testing frame for automobiles.

APPLETON, WIS.—The city commission has received from the war department the plans submitted for the proposed new Lawe street bridge over the Fox river. Arrangements are being made to call for bids early in April. The bridge will cost between $20,000 and $25,000.

APPLETON, WIS.—The Reliance Motor Truck Co. has awarded contracts for the erection of a one-story brick and steel factory building, 75 x 300 feet, and equipment is now being purchased. T. M. Purtell, 821 College avenue, Appleton, is secretary of the company.

BELOIT, WIS.—The N. B. Gaston & Sons Co., manufacturer of scales, is building an addition to its forge shops, machine shops and foundry.

BRODHEAD, WIS.—The Power Engineering Co., Minneapolis, has been engaged by the city to prepare plans for the reconstruction and enlargement of the existing hydroelectric light and power plant at a cost of about $35,000. A new flume and concrete power house, with a new water wheel and generator of the umbrella type are provided for. The system will be changed from direct current to alternating current.

GREEN BAY, WIS.—The Northwest Engineering Works has leased the machine shop of the Hartman-Greiling Co. which it will enlarge for the fabrication of steel. The company has also awarded to the Ludolf M. Hansen Co. the contract for the erection of a new boiler shop and an addition to the one now in use. The new building will be 30 x 100 feet in size, of steel and concrete construction.

LOWELL, WIS.—The Lowell Light & Power Co., W. S. Pease, general manager, will construct about 8 miles of transmission lines this year.

MARINETTE, WIS. — The Weidemann-Lindem Co., lumber manufacturer, will build a 2-story addition to its mill and factory.

MARSHFIELD, WIS.—The Winona Oil Co., Winona, Minn., plans to build a warehouse and tank system of 50,000 gallons capacity. Louis Crossen is local manager.

MILWAUKEE.—Improvements costing more than $200,000, including a complete new electrically-operated coal-handling bridge, will be made by the Milwaukee-Western Fuel Co. at its coal dock, Sixteenth and Canal streets, in the Menomonee valley. A contract has been awarded to the Mead-Morrison Co., Boston, for installing the new equipment. In addition, the company has awarded contracts for the erection of 600 feet of coal hoppers and a new fireproof building to contain a machine shop, blacksmith shop, and repair shop. The work is to be completed in time for the opening of navigation.

MILWAUKEE.—Bids received March 2 for the construction of a 3-span reinforced concrete bridge over the Milwaukee river at Green Tree road, have been rejcted and new bids will be asked. The bridge will have one 70-foot and two 60-foot arches.

MILWAUKEE.—Articles of incorporation have been filed by the United States Smelting Works. The capital stock is $10,000 and C. Brabant and F. E. Jenkins are the incorporators.

MILWAUKEE.—The owners will rebuild the light manufacturing building at 222-224 Fourth street, occupied by the A. C. Electric & Novelty Co., which was badly damaged by fire recently. The A. C. company will need much new equipment.

NIAGARA, WIS.—W. S. Shields, consulting engineer, 8 South Dearborn street, Chicago, is preparing plans and will soon take bids for the improvement of the local waterworks and sewer system at a cost of $45,000. A new pumping plant, a 50,000-gallon reservoir, and several motor-driven centrifugal pumps will be required.

CADILLAC, MICH. — The Acme Motor Truck Co. plans to build a 2-story addition to its plant.

CHARLOTTE, MICH.—The Hancock Mfg. Co., manufacturer of brass specialties, has increased its capitalization from $100,000 to $200,000.

DOWAGIAC, MICH.—The Rudy Furnace Co. will erect a molding room 60 x 100 feet and a main plant addition 100 x 100 feet in size.

DETROIT.—The Flower & Stevenson Mfg. Co., Clayton and Parkinson streets, will build a foundry addition to cost $180,000.

DETROIT.—The C. Kline Forge Co., 64 St. Aubin street, will build a forge shop costing $30,000. A. Clubb Jr., 117 West Fort street, is architect.

DETROIT.—The Michigan Stamping Co., Mack street, will build a 1-story pickling plant.

ECORSE, MICH.—The Ecorse Foundry & Machine Co. has increased its capital from $200,000 to $500,000 to provide for expansion of its plant.

GRAND RAPIDS, MICH. — The foundry and machine shop of Butterworth & Lowe, 217 Huron street, have been damaged severely

# The World Is Still Young

Half the world's population still depends on the most primitive methods of transportation. Man back, mule pack and the two-wheeled cart carry on the commerce of as many people as all the railroads—and much of the most profitable export trade of the United States is delivered this way.

The export merchant knows the intricate routes over which his orders will be shipped—he knows what severe handling they will receive—and he knows the strict regulations that govern their importation into these countries. It is for this reason that he specifies certain forms of packing that may seem to be over-strict to men used to American freight service; nevertheless it is worth the manufacturer's best personal efforts to comply with these instructions to insure the safe delivery of his goods to the foreign consumer.

We have prepared a booklet showing conditions that prevail in overseas shipping that will help your packers in building better shipping cases. We will be glad to send it to you on request.

## FEDERAL EXPORT CORPORATION

115 Broadway New York

*Say you saw it in* THE IRON TRADE REVIEW

by a fire which swept the plant March 1. The pattern shop will have to be replaced.

HOUGHTON, MICH.—The Seneca Mining Co. will rebuild its machine and forge shops, which were damaged by fire recently.

JACKSON, MICH.—The plant of the Mutual Motors Co. will be remodelled for the manufacture of projectiles for the government. Work will start April 1.

KALAMAZOO, MICH. — The Leonard Tractor Co., recently organized, proposes to build and equip a $300,000 plant here. The organizers have a contract from the Canadian government for 3000 tractors.

LANSING, MICH.—The Reo Motor Car Co., which has a contract for caterpillar tractors from the government, plans to install new machinery.

MARQUETTE, MICH.—The chemical plant of the Pioneer Iron Co., recently damaged by an explosion, is being rebuilt.

MIDLAND, MICH. — The plants of the Dow Chemical Co. here and at Mt. Pleasant have been taken over by the government, which will expend $2,000,000 on their enlargement.

MUSKEGON, MICH.—The Continental Motors Corp. plans the erection of a new drop forge plant.

PORT HURON, MICH.—The Mueller Metals Co. has spent $405,000 in building and equipping its plant. Two hundred and fifty-thousand dollars worth of equipment has been ordered.

PORT HURON, MICH. — The American Machines Corp., a subsidiary of the American-Canadian Resources Co., manufacturer of munitions, has purchased the plant of the American Machinery Co. here, which it will enlarge. The corporation has a $500,000 shell contract.

SAGINAW, MICH.—The Erd Motor Co., manufacturer of tractors and motor trucks, plans to add 48,000 square feet of floor space to its factory and to install additional machinery. B. G. Appleby is president.

STEVENS POINT, WIS. — The Jackson Milling Co. has awarded the contract for flume gates and other structural steel for the new $500,000 hydroelectric power plant it is constructing on the Wisconsin river north of the city. L. A. DeGuere, Grand Rapids, Wis., is supervising engineer.

WEST ALLIS, WIS. — Considerable new milling machine and other machine tool equipment is being installed by the Standard Separator Co. at its plant on Burnham street.

PEORIA, ILL.—The Electrical Testing Co. is building a 1-story repair shop 60 x 180 feet to cost $10,000.

WINTHROP HARBOR, ILL.—The Winther Motor Truck Co. has started construction of a new motor truck factory group to cost $125,000. This expansion is necessary to handle a recent government contract for military trucks.

ANDERSON, IND.—The Hill Pump Co. has received a $2,500,000 contract to manufacture steam turbines and gears for naval vessels. The company will increase its capitallization from $250,000 to $750,000 and will make extensions to its plant.

EAST CHICAGO, IND. — The Hubbard Steel Foundry Co. has let contracts for an additional steel foundry building, 100 x 600 feet in size, of brick and steel construction. A 3-ton Snyder electric furnace has been contracted for and a 5-ton open-hearth furnace will be installed also.

EVANSVILLE, IND.—The Hercules Gas Engine Co., J. D. Craft, manager, will build an addition 180 x 450 feet, estimated to cost $150,000, on which bids will be taken about March 15.

GARY, IND.—The Hubbard Steel Foundry Co. has awarded the general contract to the Northwestern Bridge & Iron Co., Milwaukee, for the erection of a new foundry addition of brick and steel, with steel sash sides and monitors. The building will require 450 tons of structural material.

INDIANAPOLIS.—The Van Briggle Motor Device Co. has increased its capitalization from $150,000 to $300,000.

LAWRENCEBURG, IND. — The pattern shop of the August D. Cook Co., manufacturer of pumps, was severely damaged by fire recently, with a loss estimated at $10,000.

MICHIGAN CITY, IND.—The Joseph W. Hays Corp. has been incorporated with a capital of $275,000 to manufacture machinery. The incorporators are Frank R. Warren, Floyd A. Deahl and others.

MUNCIE, IND.—The Indiana Steel & Wire Co. has increased its capitalization from $150,000 to $450,000, and will build additions to its plant.

SOUTH BEND, IND.—The Johnson Motor Wheel Co., capitalized at $100,000, has been chartered to manufacture machinery and wheels by A. C. Schubert, O. C. Decker and Herbert E. Marshall.

SOUTH BEND, IND.—The Columbia Battery Co., capitalized at $10,000, has been chartered to manufacture storage batteries by William B. Starr, Frank L. Stedman and O. M. Knoblock.

BUCYRUS, O.—A charter of incorporation has been granted to the American Steel & Machinery Co., capitalized at $500,000. The incorporators include S. H. Tolles, R. C. Hyatt, John M. Garfield and others.

CANTON, O.—The Luntz Iron & Steel Co. has been chartered with $100,000 capital. The incorporators are D. S. Luntz, F. S. Luntz and others.

CINCINNATI.—A charter of incorporation has been granted to the Grant Machine Co., capitalized at $20,000. The incorporators include Louis H. Friedman, Joseph Greenbaum, Geoffrey Goldsmith and others.

CINCINNATI.—The R. K. Le Blond Machine Co. has awarded the contracts for the erection of a $35,000 addition to its plant. Zettel & Rapp, architects, are in charge of the construction.

CINCINNATI.—The Nolte Machine Screw Products Co. has purchased a site adjoining its present plant on Freeman avenue, on which it will build a factory addition, 25 x 125 feet in size. Plans already have been drawn. Some new machinery and equipment will be required.

CLEVELAND.—The Cleveland Metal Products Sales Co. has been chartered with $25,000 capital. The incorporators include George B. Folk, Frank H. Pelton, E. G. Rushforth, Norton McGiffin and others.

CLEVELAND.—The Cleveland Hardware Co. has obtained a permit to build a 1-story, 60 x 200-foot addition to its machine shop at 3240 East Seventy-ninth street, to cost $6000.

CLEVELAND.—The Van Dorn Iron Works Co., 2697 East Seventy-ninth street, has obtained a permit for the erection of a 50 x 120-foot machine shop to cost $8000. Contract for the construction work has been awarded to the William Dunbar Co., 8201 Cedar avenue.

CLEVELAND.—Ernest McGeorge, engineer, Leader-News building, has awarded to the

## Commercial Activities Cover Extensive Field

*FOLLOWING the consolidation between the Pacific Hardware & Steel Co. and Baker & Hamilton of San Francisco, the new organization under the title, Baker, Hamilton & Pacific Co. has opened eastern offices at 30 Church street, New York. E. R. Wendemuth is office manager.*

*The Cameron Clay Products Co. has removed from Cameron, Pa., to Emporium, Pa., where home offices will be maintained.*

*A. L. & M. I. Goldstein have purchased the stock and equipment of the Cleveland Belting & Machinery Co., which will be scrapped and sold. The Cleveland Belting & Machinery Co. will continue in business at 1922 Scranton road, Cleveland, with a fresh line of second hand machinery.*

*Cyril J. Bath & Co., machinery dealers, announce the removal of offices from the Leader-News building to the stock rooms at 721 St. Clair avenue N. E., Cleveland.*

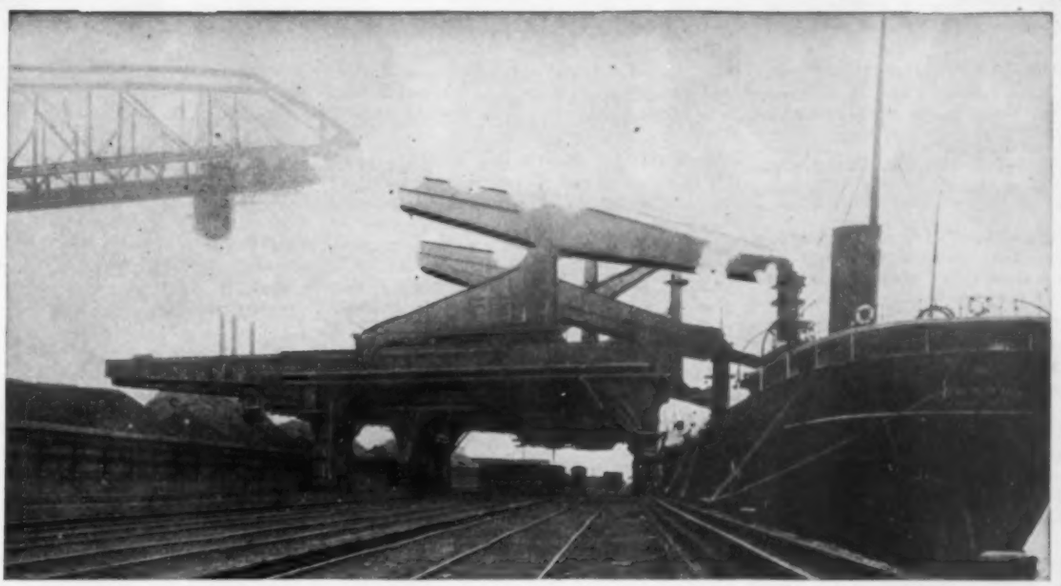
*The Trussed Concrete Steel Co. has simplified its name to the Trus-Con Steel Co., maintaining the same organization and the same plant and sales offices at Youngstown, O.*

*The Vanadium Alloys Steel Co., with works at Latrobe, Pa., has opened an office at 1015 Citizens Bank building, Cleveland.*

*F. H. Wheeler, founder and president of the former Wheeler & Holcomb Co., Chicago, manufacturers of safety garments and appliances, has inaugurated a similar business under the style of the F. H. Wheeler Mfg. Co., with offices in the Kimball building, Chicago.*

*The Permutit Co., manufacturers of water softening and water rectification apparatus, formerly located at 30 East Forty-second street, New York, announces its removal to 440 Fourth avenue, New York.*

*D. Fechheimer, formerly with Joseph Joseph & Bros. Co., scrap iron and steel dealers, has opened an office at 20 East Jackson boulevard, Chicago, to engage in buying and selling scrap iron and steel, relaying rails, railway supplies and metals.*



# Steel Giants Do Work of Thousands of Men

All of the large modern ore docks constructed during the last six years have been equipped with **Hulett Boat Unloaders.** These machines have become a standard for unloading Iron Ore, and ***they are equally well adapted for unloading Coal.***

Hulett Unloaders are built in the following sizes and guaranteed capacities: **For Ore:** *17-Ton Buckets*, capacity 1,250,000 tons per season; *15-Ton Buckets*, capacity 1,000,000 tons per season; *10-Ton Buckets*, capacity 750,000 tons per season. **For Coal:** *8-Ton Buckets*, capacity 500,000 tons per season.

**Hulett Unloaders** require (1) fewest number of men, (2) lowest labor cost per ton, (3) lowest power cost per ton, (4) lowest maintenance cost per ton.

Complete Ore and Coal Handling Stations, equipped with Boat Unloaders, Car Dumpers, Rehandling Bridges, etc., are a specialty of The W-S-M Company.

**Bulletins** are in preparation on Ore and Coal Handling Machinery. *Send for your copies.*

*The four Unloaders pictured above constitute the Pennsylvania Railway's Whisky Island installation at Cleveland, Ohio.*

***Principal Products of The W-S-M Company***

Steel Plant Equipment:
Manipulators, Furnaces, Charging Machines, etc.
By-Product Coke Oven Machinery.
Shipyard Cranes.
Hoisting and Mining Machinery.
Ore and Coal Handling Machinery.
Special Large Cranes.
Gas Producers, Gas Valves.
Hydraulic Turbines.
Johnson Hydraulic Valves.
Steel Castings.

WELLMAN SEAVER MORGAN COMPANY
CLEVELAND
OHIO U.S.A

A. A. Lane Construction Co. the contract to build a factory for the Ohio Electric & Controller Co., 5900 Maurice avenue. The building will be 60 x 80 feet and will cost $6000.

CLEVELAND.—G. F. Mitchell & Sons, sheet metal manufacturers, have had plans prepared for a 2-story plant at 2503 Cedar avenue, 60 x 150 feet in size, to cost $35,000.

CLEVELAND.—The Cleveland Heater Co., plans to install considerable new equipment at its plant.

CLEVELAND.—The Cleveland Electric Illuminating Co. has obtained a permit to erect a 2-story turbine and boiler house, 105 x 161 feet in size, at 720 East Seventieth street. The cost of the proposed structure is estimated at $600,000.

CLEVELAND.—Plans have been prepared by S. H. Weis, architect, Schofield building, for a foundry to be built at Bessemer avenue and East Seventy-ninth street, for the Lake Erie Smelting & Refining Co., 7900 Bessemer avenue. The J. P. Stodder Co., 809 Leader-News building, will award the contract. The building will be 1-story, and 60 x 103 feet. Cost is estimated at $18,000.

COLUMBUS, O. — The Pennsylvania railroad has awarded contracts for the erection of two additions to its repair and machine shops.

COLUMBUS, O.—The Columbus Conveyor Co. has been incorporated with $40,000 capital. The incorporators are W. H. Jones, Samuel T. Isaac, Robert E. Belt, H. F. Belt and O. A. Wheaton.

ELYRIA, O. — The pressure regulating building of the Cleveland, Southwestern & Columbus railroad has been severely damaged by an explosion of gas. Considerable machinery will have to be replaced.

FREMONT, O.—A charter of incorporation has been granted to the Solid Steel Scissors Co., capitalized at $10,000. The incorporators include Dr. George Zimmerman, Hurd J. Miller, Charles L. Halter, E. L. Bogue and Bert J. West.

HAMILTON, O.—The Columbia Machine Tool Co. has increased its capital from $50,000 to $100,000 to provide for plant extensions and the purchase of new equipment. Fred E. Goldsmith is president of the company.

LIMA, O.—The city plans to build a machine shop to cost $12,000. J. I. Heffner, city clerk, may be addressed.

LORAIN, O.—It is reported that the Cromwell Steel Co. contemplates adding several new open-hearth furnaces to its plant.

LORAIN, O.—The Cleveland Salt Works plans to erect a new chemical manufacturing plant here. The general offices of the company are at Cleveland.

MANSFIELD, O. — The Ohio Mechanical & Electrical Maintenance Co. has been incorporated by William H. Thompson, Guy E. Thompson, Ellsworth G. Clark, Harry Calhorn and others.

MT. VERNON, O.—The plant of the L. S. Denney Steel Plate & Boiler Co. has been severely damaged by fire.

NORWOOD, O.—A. V. Carroll, 3548 Mooney avenue, Cincinnati, manufacturer of lathes, will receive bids until March 15 on the construction of a 1-story, 60 x 150-foot factory to be erected in Norwood.

SALEM, O.—The Salem Lighting Co. has had plans prepared by Day & Zimmerman, Inc., 611 Chestnut street, Philadelphia, for a boiler house addition to be 1-story high and 31 x 40 feet in size. The building will cost about $30,000. The general contract has been awarded to the Walker & Curley Co., East End Trust building, Pittsburgh.

TOLEDO, O.—The W. G. Nagel Electric Co. has purchased the plant of the Advance Machinery Co. adjoining its works, which it plans to equip for the manufacture of its own product.

VAN WERT, O.—An explosion of gas followed by fire caused a loss of $1000 at the plant of the Van Wert Gas Light Co., recently.

YOUNGSTOWN, O.—The Trus-Con Steel Co. has awarded to Whitehead & Kale, Detroit, the contract for erecting a factory addition 30 x 400 feet, to cost about $200,000.

YOUNGSTOWN, O.—The Brier Hill Steel Co. plans to erect a large machine shop, in addition to a tandem plate mill and an additional blast furnace. The machine shop will be completely equipped with the most modern devices.

COVINGTON, KY.—The Foundry Equipment & Metals Co. has been incorporated with a capital of $10,000 to manufacture tools machinery, and equipment. Frank X. Bertsch, Coalton, Ky., is in charge.

PIKEVILLE, KY.—The Big Elkhorn Coal Co., capitalized at $100,000, has been organized by W. W. Justice, W. K. Elliott, M. C. Justice and others for the development of 700 acres of coal lands at Betsey Lane on the Chesapeake & Ohio railroad. It is expected that the company will begin coal shipments within 60 days.

# New Business in Eastern Canada

ARMAGH, ONT.—Bids will be asked by the Armagh Electric Co. in April on machinery and equipment for a proposed power plant to cost $40,000.

COBOURG, ONT.—Swaddling & Sons Ltd. have been incorporated to manufacture machinery, automobiles and parts, with $40,000 capital stock, by Charles J. Swaddling, John F. McGuire and others.

FORT WILLIAM, ONT.—E. G. Peniman, Graham & Horne block, has the general contract and the Dominion Bridge Co., Canada building, Winnipeg, Man., the steel contract for the building of a steel shipbuilding plant for the Canadian Car & Foundry Co., 1209 Laughton avenue, Fort William.

GALT, ONT.—The Galt Foundry Co. Ltd. has been incorporated to carry on business as founders and machinists with $40,000 capital stock. Norman B. Colvin, Daniel Buchanan, William E. Demill and others are interested.

GUELPH, ONT.—Dr. J. A. Armstrong, president, the Oakoal Co., Royal Bank building, Toronto, Ont., will have charge of construction work, the purchasing of machinery, furnaces, etc., for the plant his company will build at Guelph, to cost about $60,000.

HAMILTON, ONT.—The Hamilton Bridge Works Co. is building an addition to its plant and will shortly be ready for the installation of new machinery. Cost is estimated at $25,000.

LONDON, ONT.—The plant of T. M. Knowles, recently damaged by fire with a loss of $15,000, will be rebuilt immediately and new machinery will be purchased. Thomas Knowles, 36 Weston street, is manager of the company.

OTTAWA, ONT.—John A. Pearson, architect of the parliament buildings, will receive tenders up to March 25 for switchboards, panel boards and transformers required. Plans and specifications can be obtained from the general contractor, P. Lyall & Sons Construction Co., Ltd., Ottawa.

TILLSONBURG, ONT.—The main building of the Huntley Mfg. Co. was severely damaged by fire March 6, causing a loss of about $100,000, partly covered by insurance. A large quantity of machinery was damaged.

TORONTO, ONT.—The Canadian National Carbon Co. Ltd. has been incorporated to manufacture iron, steel, molybdenum and copper products with $1,200,000 capital stock. Howard A. Harrison, 2 Wilton Crescent; Robert E. Laidlaw, William N. Robertson and others, Toronto, are interested.

TORONTO, ONT.—R. A. Lister & Co., Ltd., has been incorporated to carry on the business of iron and brass founder, mechanical engineer and machinery manufacturer, with $1,000,000 capital stock, by Sir Robert A. Lister, Dursley, Gloucestershire, England; Charles A. Lister, Bristol, Eng.; Walter J. Ellis and Reginald Howell, Toronto, Ont., and David N. Jamieson, Winnepeg, Man.

TORONTO, ONT.—The Rapid Radiators Ltd. has been incorporated to manufacture radiators, thermostatic controlling devices and machinery, with $40,000 capital stock. Jacob Greenberg, 24 King street west; John Campbell, Gordon T. Griffiths and others, Toronto, are interested.

WELLAND, ONT.—The Metals Chemical Development Co. Ltd. has been incorporated to manufacture chemical compounds, machinery, equipment, etc., with $40,000 capital stock, by Arthur W. Holmested, Room 43, 20 King street east, James L. Ross, Lancing B. Campbell and others, Toronto, Ont.

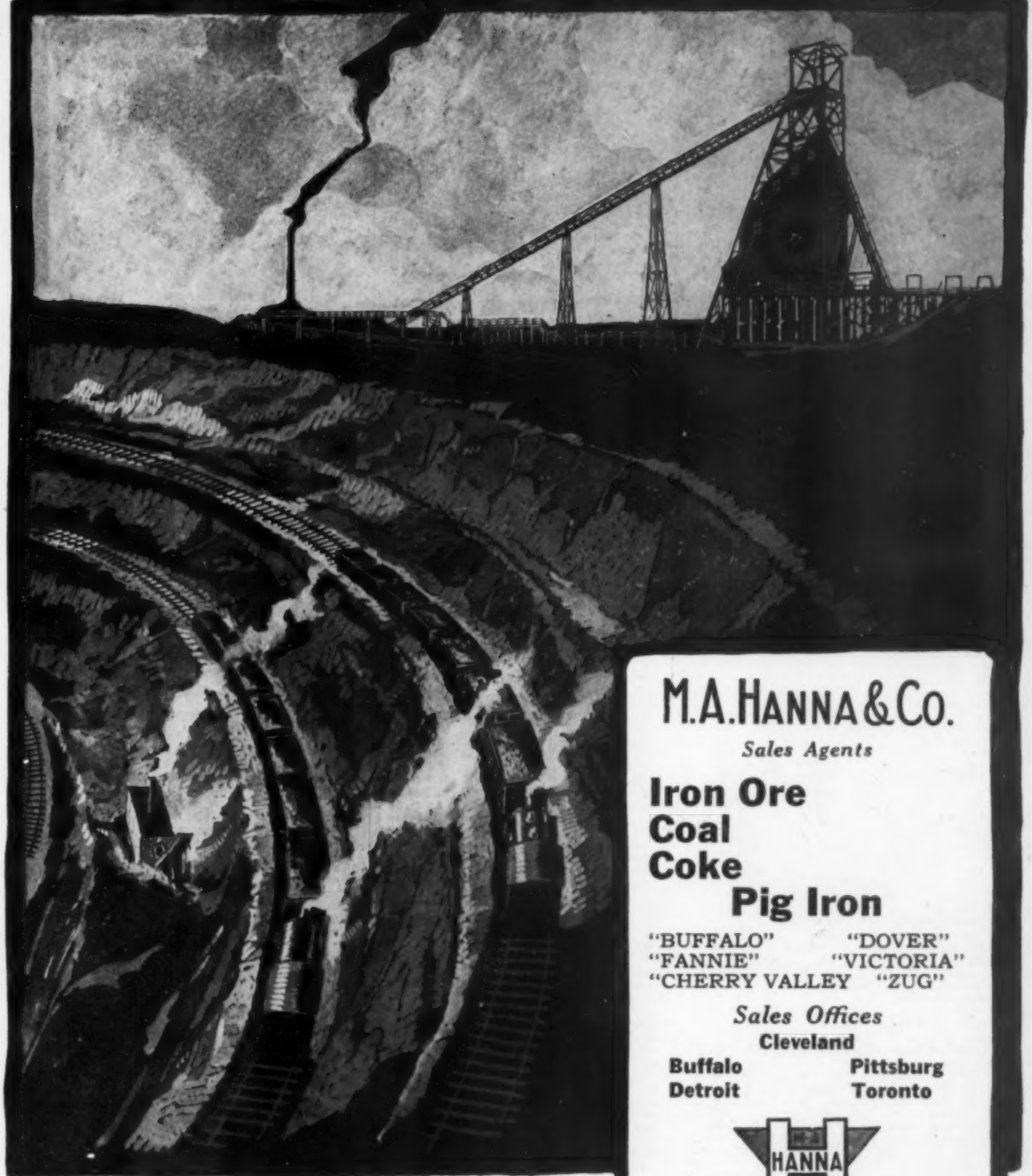
WINDSOR, ONT. — The Cadwell Brick Co. Ltd. has been incorporated to manufacture brick, tile, terra cotta, sewer pipe, etc., with $200,000 capital stock. Charles W. Cadwell, Oscar E. Fleming, Windsor, Ont.; Robert K. Russell, Toronto, Ont., and others, are interested.

MONTREAL, QUE. — The Tolland Mfg. Co., Ltd., has been incorporated to manufacture iron, steel and other metals from the ore to the finished product with $50,000 capital stock. Waldo W. Skinner, William G. incorporators.

MONTREAL, QUE.—The George F. Ross Machinery & Supply Co. Ltd. has been incorporated to manufacture machinery, tools and supplies, with $200,000 capital stock, by George Davenport, Ledger E. Potvin, Leo Delage and others, Montreal.

SHAWINIGAN FALLS, QUE.—The Shawinigan Water & Power Co. will erect a plant for the manufacture of acetic acid on a large scale for the United States government, which will finance the enterprise.

# HANNA



M. A. HANNA & CO.

*Sales Agents*

**Iron Ore**
**Coal**
**Coke**
**Pig Iron**

"BUFFALO" "DOVER"
"FANNIE" "VICTORIA"
"CHERRY VALLEY "ZUG"

*Sales Offices*

**Cleveland**
**Buffalo** **Pittsburg**
**Detroit** **Toronto**

HANNA

# Iron and Steel Prices

**Corrected to Tuesday Noon**

## IRON ORE

Superior Ores, Per Ton, Lower Lake Ports

| | |
|---|---|
| Old range Bessemer, 55 iron | $5.95 |
| Mesabi Bessemer, 55 iron | 5.70 |
| Old range non-Bess., 51½ iron | 5.20 |
| Mesabi non-Bess., 51½ iron | 5.05 |

## WAREHOUSE PRICES

| | |
|---|---|
| Steel bars, Chicago | 4.10c |
| Steel bars, Cleveland | 4.035c |
| Steel bars, Detroit | 4.085c |
| Steel bars, Philadelphia | 4.10c |
| Steel bars, New York | 4.095c |
| Steel bars, St. Louis | 4.17c |
| Steel bars, Cincinnati | 4.085c |
| Steel bars, St. Paul | 4.22c |
| Steel bars, Buffalo | 4.05c |
| Iron bars, Buffalo | 4.65c |
| Iron bars, Chicago | 4.10c |
| Iron bars, Cleveland | 3.985c |
| Iron bars, Detroit | 4.75c |
| Iron bars, St. Louis | 4.17c |
| Iron bars, Cincinnati | 4.085c |
| Iron bars, Philadelphia | 4.50c |
| Iron bars, New York | 4.659c |
| Shapes, Chicago | 4.20c |
| Shapes, Detroit | 4.185c |
| Shapes, St. Louis | 4.27c |
| Shapes, St. Paul | 4.32c |
| Shapes, New York | 4.195c |
| Shapes, Cleveland | 4.135c |
| Shapes, Philadelphia | 4.20c |
| Shapes, Buffalo | 4.15c |
| Shapes, Cincinnati | 4.185c |
| Plates, Buffalo | 4.40c |
| Plates, Chicago | 4.45c |
| Plates, Detroit | 4.435c |
| Plates, St. Louis | 4.52c |
| Plates, St. Paul | 4.57c |
| Plates, New York | 4.445c |
| Plates, Cleveland | 4.385c |
| Plates, Philadelphia | 4.45c |
| Plates, Cincinnati | 4.435c |
| No. 10 blue anl. sheets, Chi. | 5.45c |
| No. 10 blue anl. sheets, Cleve. | 5.385c |
| No. 10 blue anl., Buffalo | 5.40c |
| No. 10 blue anl., sheets, St. L. | 5.52c |
| No. 10 blue anl. sheets, Cinci. | 5.435c |
| No. 10 blue anl. sheets, St. Paul | 5.57c |
| No. 10 blue anl. sh., Detroit | 5.435c |
| No. 28 black sheets, Chgo. | 6.45c |
| No. 28 black sheets, Cleve. | 6.385c |
| No. 28 black sheets, Cinci. | 5.45c |
| No. 28 black, Detroit | 6.435c |
| No. 28 black sheets, St. L. | 6.52c |
| No. 28 black sheets, St. Paul | 6.57c |
| No. 28 galv. sheets, Chgo. | 7.70c |
| No. 28 galv. sheets, Cleve. | 7.635c |
| No. 28 galv. sheets, Cinci. | 6.635c |
| No. 28 galvanized, Detroit | 7.685c |
| No. 28 galv. sheets, St. L. | 7.77c |
| Hoops, Cleveland | 4.885c |
| Hoops, Detroit | 4.935c |

## IRON AND STEEL SCRAP

### STEEL WORKS USE

(Gross Tons)

| | |
|---|---|
| Bundled sheets, Pittsburgh | $22.00 to 23.00 |
| Bundled sheets, Cleveland | 24.50 to 25.25 |
| Bundled sheets, Buffalo | 22.00 to 24.00 |
| Boiler plate, cut, No. 1 Chgo. | 24.50 to 25.50 |
| City wrought, short, N. Y. | 26.75 |
| Frogs, switches, guards, St. L. | 29.50 to 30.00 |
| Frogs, switches, guards, Chgo. | 30.00 |
| Heavy melting steel, Pitts. | 30.00 |
| Heavy melting steel, Buffalo | 30.00 |
| Heavy melting steel, Chgo. | 30.00 |
| Heavy melt'g steel, Cleveland | 30.00 |
| Heavy melting steel, Cinci. | 27.00 to 27.50 |
| Heavy melt'g steel, east. Pa. | 28.50 to 29.50 |
| Heavy melting steel, N. Y. | 26.75 |
| Heavy melting steel, St. L. | 29.50 to 30.00 |
| Heavy melting steel, Birming. | 25.00 to 26.00 |
| Hydraulic press sheets, Cleve. | 29.50 to 30.00 |
| Hydraulic press. sheets, Pitts. | 27.00 to 28.00 |
| Hydraulic press. sheets, Chgo. | 27.00 to 27.50 |
| Knuckles, couplers, Chgo. | 35.00 |
| Low phos. steel, Buffalo | 40.00 |
| Low phos. steel, Pittsburgh | 40.00 |
| Low phos. steel, eastern Pa. | 37.50 |
| Shoveling steel, Chicago | 30.00 |
| Shoveling steel, St. Louis | 29.50 to 30.00 |
| Springs, Chgo. | 35.00 |
| Steel rails, short, Chicago | 34.50 to 35.00 |
| Steel rails, short, Cleveland | 35.00 |
| Steel rails, short, St. Louis | 34.00 to 35.00 |
| Steel rails, old, Birmingham | 28.00 to 30.00 |
| Stove plate, Chgo. | 25.50 to 26.50 |
| Stove plate, Cincinnati | 19.50 to 20.00 |
| Stove plate, St. Louis | 20.50 to 21.00 |
| Stove plate, N. J. points | 23.75 |
| Stove plate, Birmingham | 19.00 to 22.00 |
| Stove plate, Buffalo | 25.00 |
| Stove plate, eastern Pa. | 23.00 to 24.00 |
| Stove plate, Cleveland | 28.50 |
| Stove plate, Pittsburgh | 20.00 to 21.00 |

(Net Tons)

| | |
|---|---|
| Boiler plate, cut, No. 1, St. L. | 24.50 to 25.00 |
| Bundled sheets, Cincinnati | 20.00 to 20.50 |
| Knuckles, coup., St. Louis | 31.00 to 31.25 |

### Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

| | |
|---|---|
| Cleveland | $0.95 |
| Newark, N. J. | 3.50 |
| Boston | 3.70 |
| Philadelphia | 3.30 |
| Pittsburgh | .95 |
| St. Louis | 3.18 |
| Minneapolis, St. Paul | 4.54 |

Buffalo to:

| | |
|---|---|
| Albany, N. Y. | $1.26 |
| New England (rail) | 3.10 |
| New York and Brooklyn (rail) | 3.10 |

Virginia furnaces to:

| | |
|---|---|
| Philadelphia | $3.27 |
| New England | 3.77 |
| Brooklyn, Jersey City, Newark | 3.52 |

Birmingham, Ala., to:

| | |
|---|---|
| Boston | 6.00 |
| Cincinnati | 2.90 |
| Chicago | 4.00 |
| Cleveland | 4.00 |
| Louisville, Ky. | 2.65 |
| Minneapolis, St. Paul | 5.85 |
| New York (r. and w.) | 6.00 |
| Philadelphia (r. and w.) | 5.25 |
| Pittsburgh | 4.90 |
| Savannah, Ga. | 2.75 |
| St. Louis | 3.40 |

Chicago to:

| | |
|---|---|
| Des Moines | $2.80 |
| Milwaukee | .50 |
| Minneapolis, St. Paul | 2.00 |
| Moline, Ill. | 1.15 |
| Omaha | 3.58 |
| St. Louis | 1.58 |

Ironton and Jackson, O., to:

| | |
|---|---|
| Chicago | $2.54 |
| Cincinnati | 1.26 |
| Cleveland | 1.62 |
| Detroit | 1.81 |
| Indianapolis | 1.58 |
| Minneapolis, St. Paul | 4.54 |

Duluth, Minn., to:

| | |
|---|---|
| Minneapolis-St. Paul | $1.25 |

Mayville, Wis.:

| | |
|---|---|
| Minneapolis-St. Paul | $1.75 |

### Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

| | |
|---|---|
| New York | 19.5 cents |
| Philadelphia | 18.5 cents |
| Boston | 21.5 cents |
| Buffalo | 16.0 cents |
| Baltimore | 18.0 cents |
| Cleveland | 13.5 cents |
| Cincinnati | 17.0 cents |
| Chicago | 21.5 cents |
| Detroit | 15.7 cents |
| Minneapolis and St. Paul | 32.9 cents |
| Denver | 82.5 cents |
| St. Louis | 27.0 cents |
| New Orleans | 30.0 cents |
| Birmingham | 45.0 cents |
| Pacific coast (all rail) | 75.0 cents |
| Pacific coast (tin plate) | 75.0 cents |

### IRON MILL USE

(Gross Tons)

| | |
|---|---|
| Angle bars, iron, Chgo. | 40.00 |
| Arch bars, transoms, Chgo. | 47.50 |
| Busheling, No. 1, Cleveland | 32.00 |
| Busheling, No. 1, Buffalo | 30.00 to 31.00 |
| Busheling, No. 2, Buffalo | 22.00 to 24.00 |
| Busheling, No. 1, Pittsburgh | 32.00 |
| Busheling, No. 1, Chgo. | 29.50 to 30.00 |
| Busheling, No. 2, Chgo. | 20.25 to 21.25 |
| Cast borings, New York | 17.00 |
| Cast borings, eastern Pa. | 19.00 to 20.00 |
| Cast borings, Cleveland | 20.00 |
| Cast borings, Buffalo | 19.00 to 20.00 |
| Cast borings, Pittsburgh | 20.00 |
| Cast borings, Birmingham | 12.00 to 15.00 |
| Cast borings, Chgo. | 19.00 to 19.50 |
| City wrought, long, N. Y. | 31.50 to 32.00 |
| Cut forge, Chicago | 33.50 to 34.00 |
| Forge flashings, small, Cleve. | 28.00 to 28.50 |
| Forge flashings, large, Cleve. | 28.00 to 28.50 |
| Forge No. 1, eastern Pa. | 26.50 to 27.50 |
| Grate bars, Buffalo | 25.00 |
| Grate bars, Cleveland | 21.50 to 22.50 |
| Grate bars, N. J. points | 23.75 |
| Iron axles, Pittsburgh | 42.00 to 44.00 |
| Iron axles, Cincinnati | 44.00 to 44.50 |
| Iron axles, Cleveland | 47.50 |
| Iron axles, eastern Pa. | 47.50 |
| Iron axles, Chicago | 47.50 |
| Iron axles, Buffalo | 45.00 to 47.00 |
| Iron rails, Chicago | 39.00 to 40.00 |
| Iron rails, Buffalo | 37.00 to 38.00 |
| Iron rails, Cincinnati | 33.00 to 33.50 |
| Iron rails, St. Louis | 34.00 to 35.00 |
| Iron rails, Cleveland | 35.00 |
| Machine turnings, Cleve. | 18.25 |
| Machine turnings, Buffalo | 18.00 to 18.50 |
| Machine turnings, N. Y. | 16.50 |
| Machine turnings, Pitts. | 20.00 |
| Machine turnings, east. Pa. | 18.50 to 19.50 |
| Machine turnings, Birming. | 17.00 to 18.00 |
| Machine turnings, Chicago | 19.00 to 19.50 |
| Pipes and flues, Cleveland | 25.50 to 26.50 |
| Pipes and flues, Chicago | 27.25 to 28.25 |
| R. R. mch. cast, No. 1, Buff. | 35.00 |
| R. R. wrgt. No. 1, Buffalo | 35.00 |
| R. R. wrgt., No. 1, east, Pa. | 35.00 |
| Railroad wrgt., No. 1, Cleve. | 35.00 |
| R. R. wrought, No. 1, Pitts. | 35.00 |
| Railroad wr'ght, No. 1, Chgo. | 35.00 |
| Railroad wr'ght, No. 2, Chgo. | 33.50 to 34.50 |
| R. R. wrgt. No. 1, Birming. | 28.00 to 30.00 |
| Wrought pipe, Buffalo | 28.00 to 29.00 |
| Wrought pipe, eastern Pa. | 33.00 to 34.00 |
| Wrought pipe, ungraded, eastern Pa. | 30.00 |

(Net Tons)

| | |
|---|---|
| Angle bars, steel, St. Louis | 34.50 to 35.00 |
| Arch bars & transoms, St. L. | 42.00 to 42.50 |
| Busheling, No. 1, Cincinnati | 24.00 to 24.50 |
| Busheling, No. 1, St. Louis | 26.50 to 27.00 |
| Cast borings, Cincinnati | 15.50 to 16.00 |
| Cast borings, St. Louis | 17.00 to 17.50 |
| Iron axles, St. Louis | 42.00 to 42.50 |
| Machine turnings, Cinci. | 15.50 to 16.00 |
| Machine turnings, St. L. | 17.50 to 17.85 |
| Pipes and flues, St. Louis | 26.25 to 26.75 |
| Railroad wrgt., No. 1, Cinci. | 30.00 to 30.50 |
| Railroad wrgt., No. 1, St. L. | 31.00 to 31.25 |
| Railroad wrgt., No. 2, St. L. | 30.00 to 30.40 |

### IRON OR STEEL WORKS USE

(Gross Tons)

| | |
|---|---|
| Axle turnings, Cleveland | $24.00 to 25.00 |
| Axle turnings, Buffalo | 25.00 |
| Shafting, New York | 36.50 |
| Shafting, eastern Pa. | 40.00 |
| Steel car axles, Birmingham | 32.00 to 33.00 |
| Steel car axles, New York | 45.50 to 46.00 |
| Steel car axles, Buffalo | 45.00 to 47.00 |
| Steel car axles, Cleveland | 45.00 |
| Steel car axles, Pittsburgh | 40.00 to 42.00 |
| Steel car axles, eastern Pa. | 47.50 |
| Steel car axles, Chgo. | 47.50 |

(Net Tons)

| | |
|---|---|
| Shafting, St. Louis | 42.00 to 42.50 |
| Steel car axles, St. Louis | 42.00 to 42.50 |

### IRON FOUNDRY USE

(Gross Tons)

| | |
|---|---|
| Car wheels, (iron), Pitts. | $30.00 |
| Car wheels, (steel), Pitts. | 33.00 to 35.00 |
| Car wheels, eastern Pa. | 30.00 |
| Car wheels, Buffalo | 30.00 |
| Car wheels, Chicago | 30.00 |
| Car wheels, St. Louis | 29.50 to 30.00 |
| Car wheels, Birmingham | 25.00 to 30.00 |
| Car wheels, Cleveland | 30.00 |
| Tram car wheels, Birming. | 21.00 to 25.00 |
| Cast, No. 1 cupola east. Pa. | 33.00 |
| Cast, No. 1, Birmingham | 25.00 to 27.00 |
| Cast No. 1, Cleveland | 33.75 |
| Cast, 1, heavy, N. J. points | 33.25 to 33.75 |
| Cast, 1, machy., N. J. points | 33.25 to 33.75 |
| Cast No. 1, Chicago | 33.00 to 34.00 |
| Cast. No. 1, Pittsburgh | 28.00 to 29.00 |
| Malleable, Cincinnati | 30.00 to 35.00 |
| Malleable, Cleveland | 30.00 to 35.00 |
| Malleable, Buffalo | 30.00 to 35.00 |
| Malleable, Pittsburgh | 30.00 to 35.00 |
| Malleable, east. Pa. | 30.00 to 35.00 |
| Malleable railroad, Chgo. | 33.00 to 34.00 |
| Malleable, agricultural, Chgo. | 33.00 to 34.00 |

(Net Tons)

| | |
|---|---|
| Cast, No. 1, Cincinnati | 26.00 to 26.50 |
| Cast, No. 1, St. Louis | 26.50 to 27.00 |
| Malleable railroad, St. Louis | 26.25 to 26.75 |
| Malleable agricultural, St. L. | 26.50 to 26.75 |

### MISCELLANEOUS USES

(Gross Tons)

| | |
|---|---|
| Boiler punchings, Chgo. | 36.50 to 37.50 |
| Reroll. rails, 5 ft. & ov., Pitts. | 35.00 |
| Reroll. rails, 5 ft. & ov., Chgo. | 35.00 |
| Reroll. rails, 5 ft. & ov., E. Pa. | 35.00 |
| Reroll. rails, 5 ft. & ov., St. L. | 34.00 to 35.00 |
| Reroll. rails, 5 ft. or over, Cleve. | 33.00 |
| Rerolling rails, long, Birming. | 37.50 to 38.50 |
| Locomotive tires, Chgo. | 44.00 to 45.00 |

(Net Tons)

| | |
|---|---|
| Locomotive tires, St. Louis | 39.50 to 40.00 |